

Michigan 2005



The Future of Michigan's Dental Workforce

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I. APPROACH

Economic Approach

- This analysis used an economic approach to assess dental workforce.
- Demand for dental services is the fundamental determinant of the workforce needed.
- Supply of dental services must be adequate to meet the demand.

Economic Approach – Cont.

- **Demand for dental services is primarily influenced by:**
 - The size of the population, its demographic characteristics, including age.
 - The knowledge of and appreciation of dental services by the population.
 - The economic buying power of the population.
 - The amount of disease that needs to be prevented, diagnosed or treated.

Economic Approach – Cont.

- **Supply of dental services is primarily determined by:**
 - The number of dentists,
 - Their demographic characteristics,
 - Their practice patterns, and
 - Their productivity.

Economic Approach – Cont.

- The supply and demand relationship for dental services is depicted in the next slide.

Economic Approach: Supply and Demand

Population * Percent Utilizing * Expenditures per User

=

Total Expenditures

=

Number of Dentists * Output per Dentist

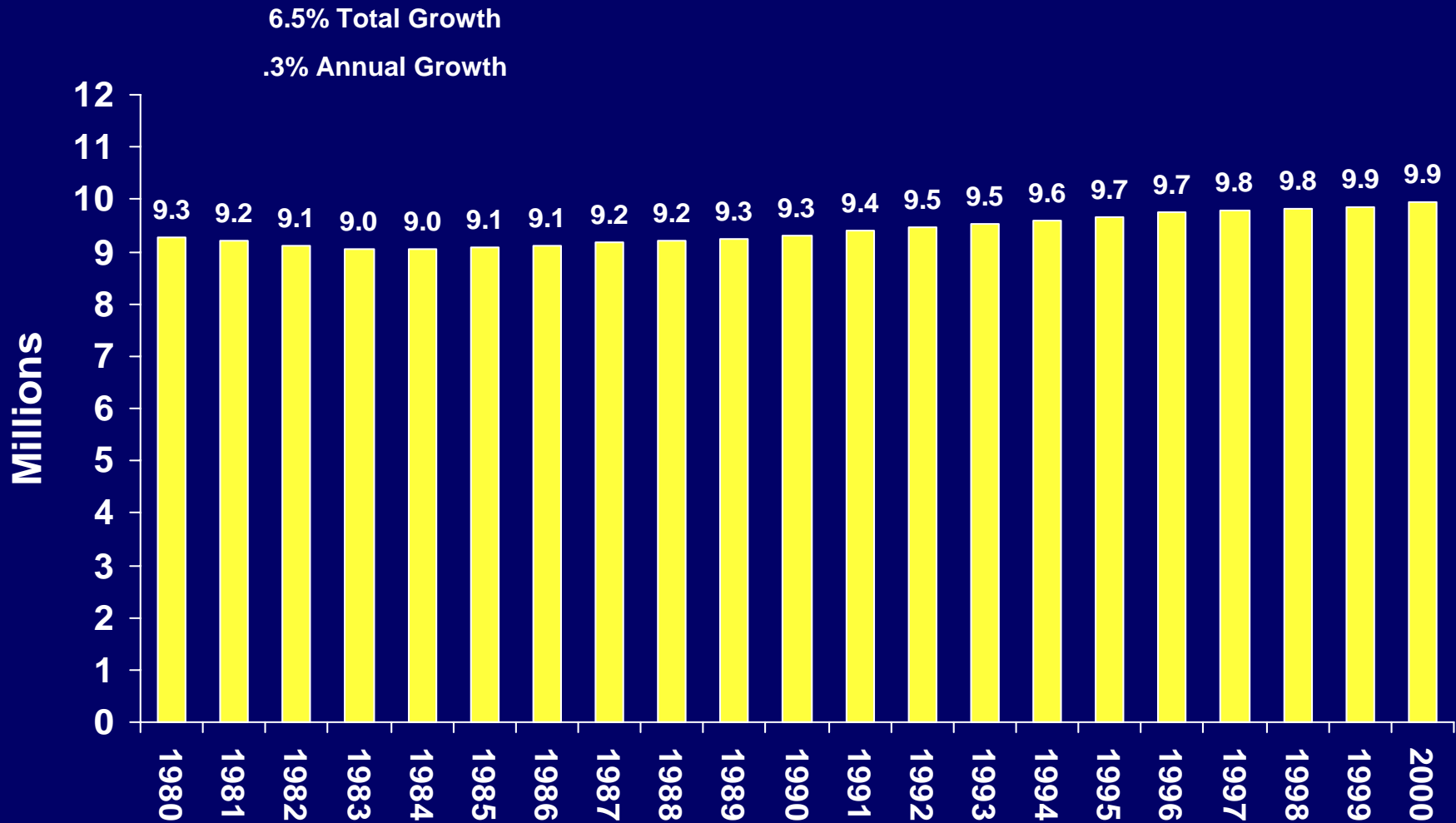
Output/Dentist = Hours Worked * Production/Hour



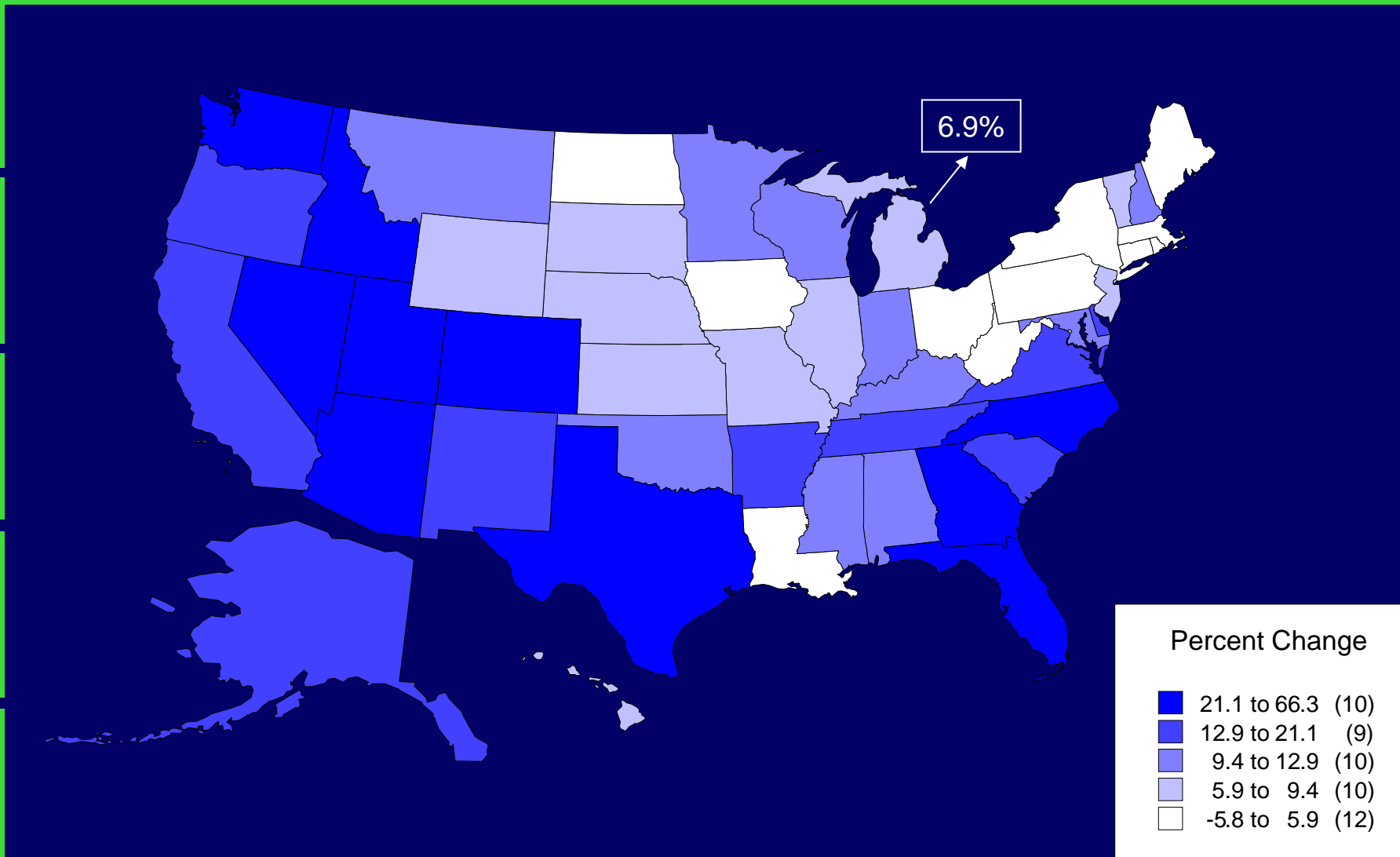
II. DEMAND FOR DENTAL CARE

POPULATION GROWTH

Michigan Population in Millions, 1980-2000

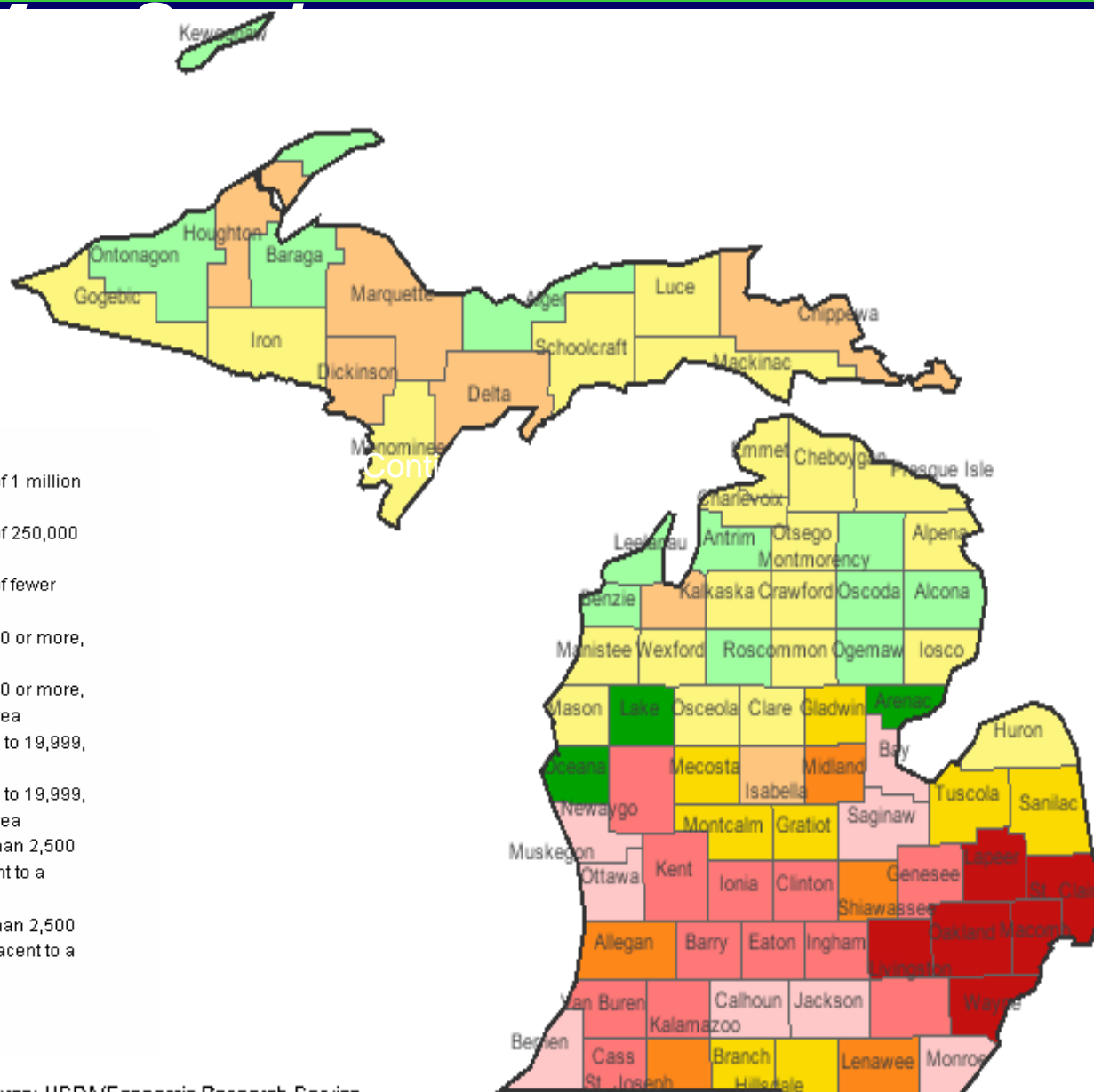


Percent Change in the U.S. Population, 1990-2000



■ Rural-urban Continuum Code, 2003

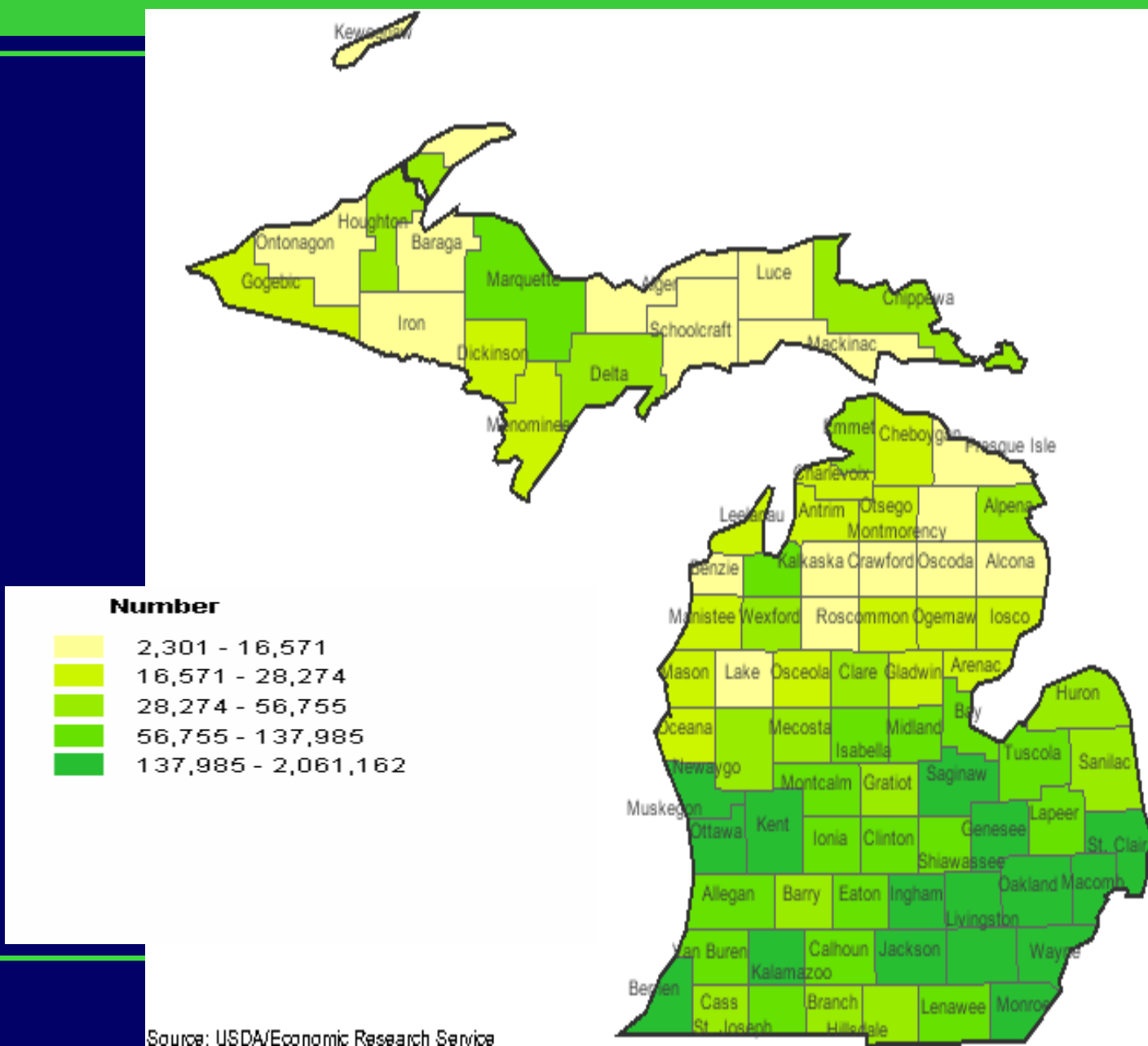
ERS



Legend

- Counties in metro areas of 1 million population or more
- Counties in metro areas of 250,000 to 1 million population
- Counties in metro areas of fewer than 250,000 population
- Urban population of 20,000 or more, adjacent to a metro area
- Urban population of 20,000 or more, not adjacent to a metro area
- Urban population of 2,500 to 19,999, adjacent to a metro area
- Urban population of 2,500 to 19,999, not adjacent to a metro area
- Completely rural or less than 2,500 urban population, adjacent to a metro area
- Completely rural or less than 2,500 urban population, not adjacent to a metro area

Base population for estimates - 2000



Source: USDA/Economic Research Service

ERS Map

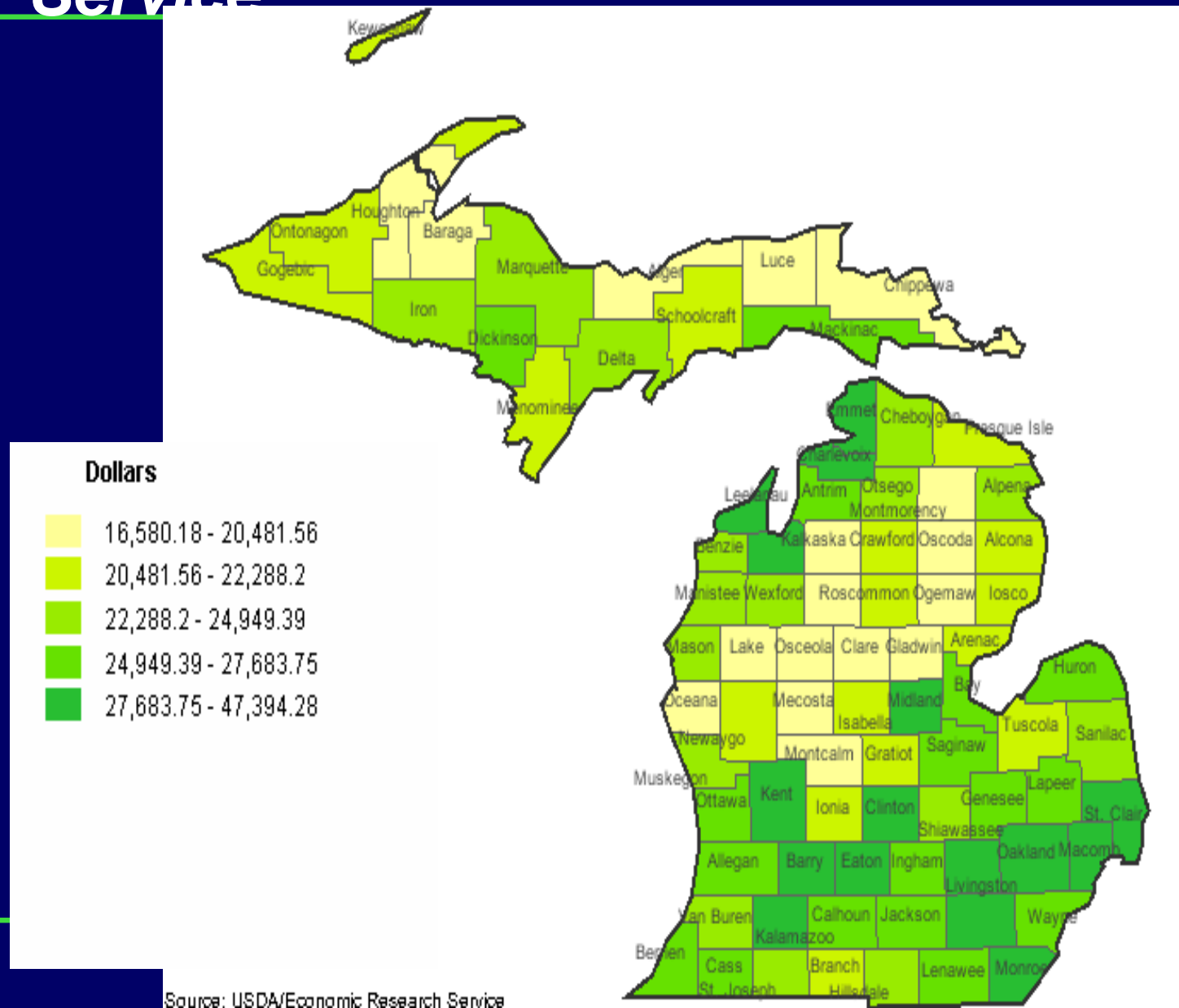


ERS



■ Per Capita Income 2002 Service

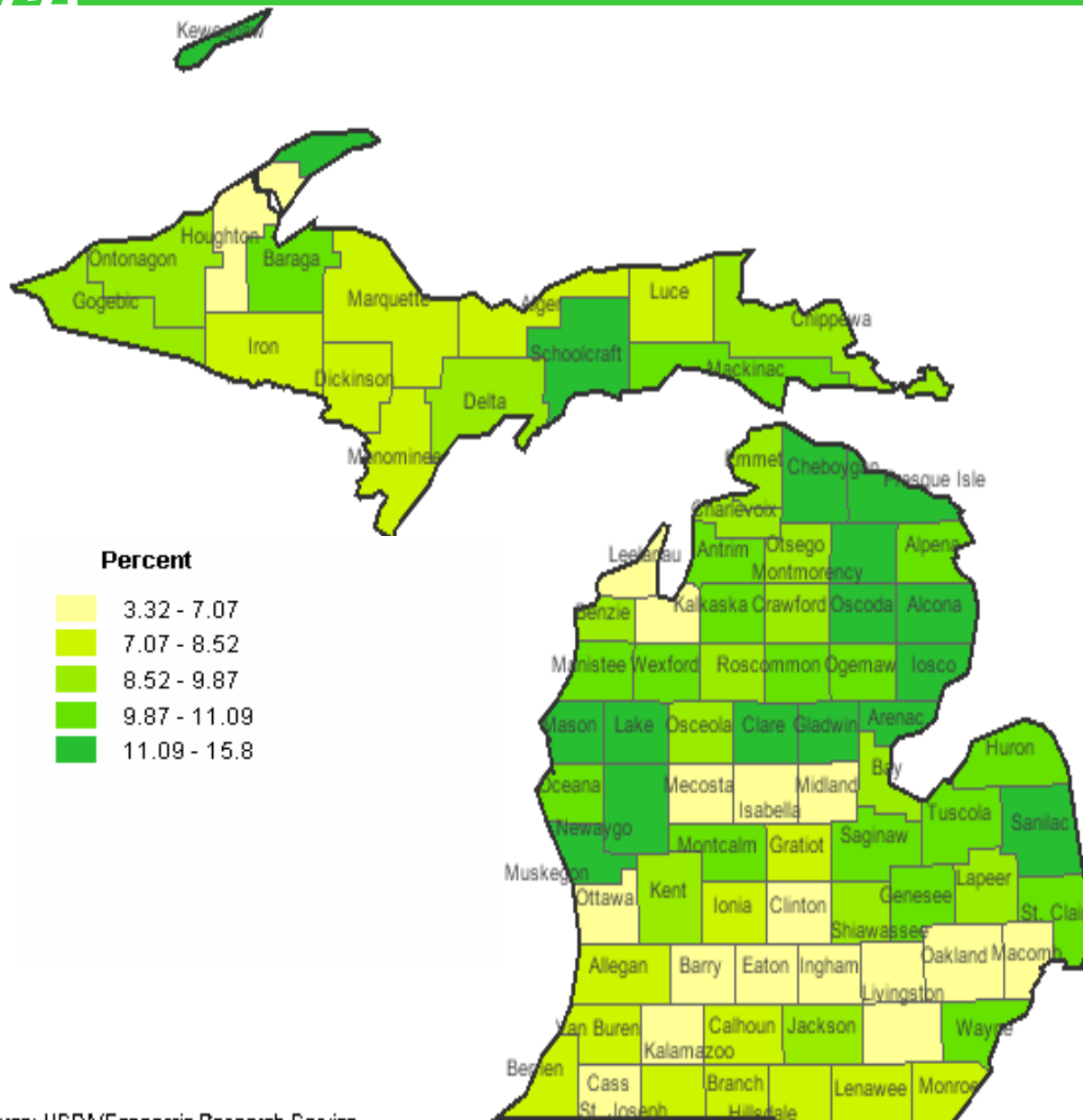
ERS Map



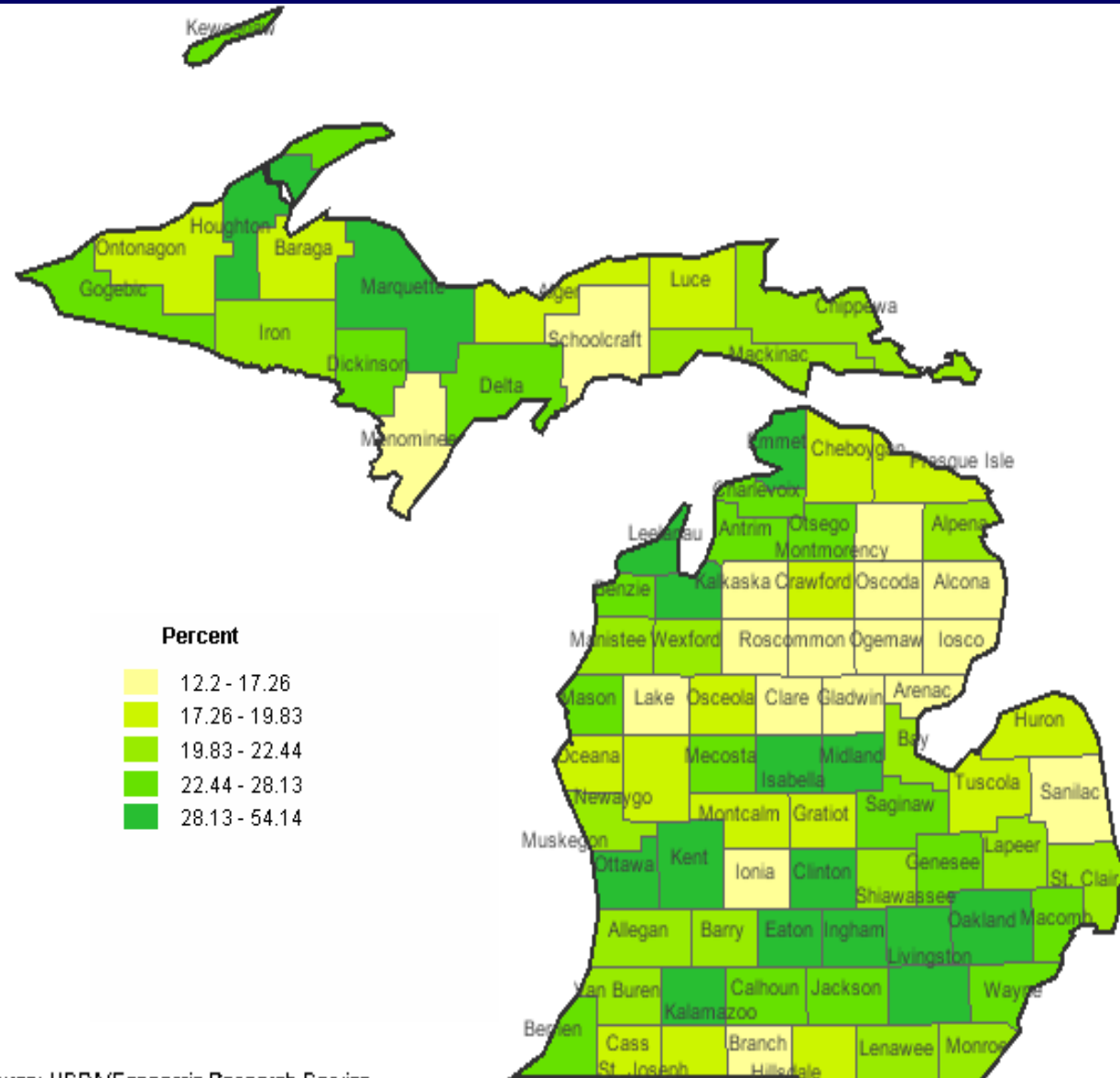
Source: USDA/Economic Research Service

■ Unemployment Rate 2003 Service

ERS Map



■ **Percent of Population 25 Years and Older Completing College 2000** *ERS Map* *Servi*



Source: USDA/Economic Research Service

Service



	4.41 - 15.32
	15.32 - 25.25
	25.25 - 35.43
	35.43 - 48.86
	48.86 - 65.58

Source: USDA/Economic Research Service

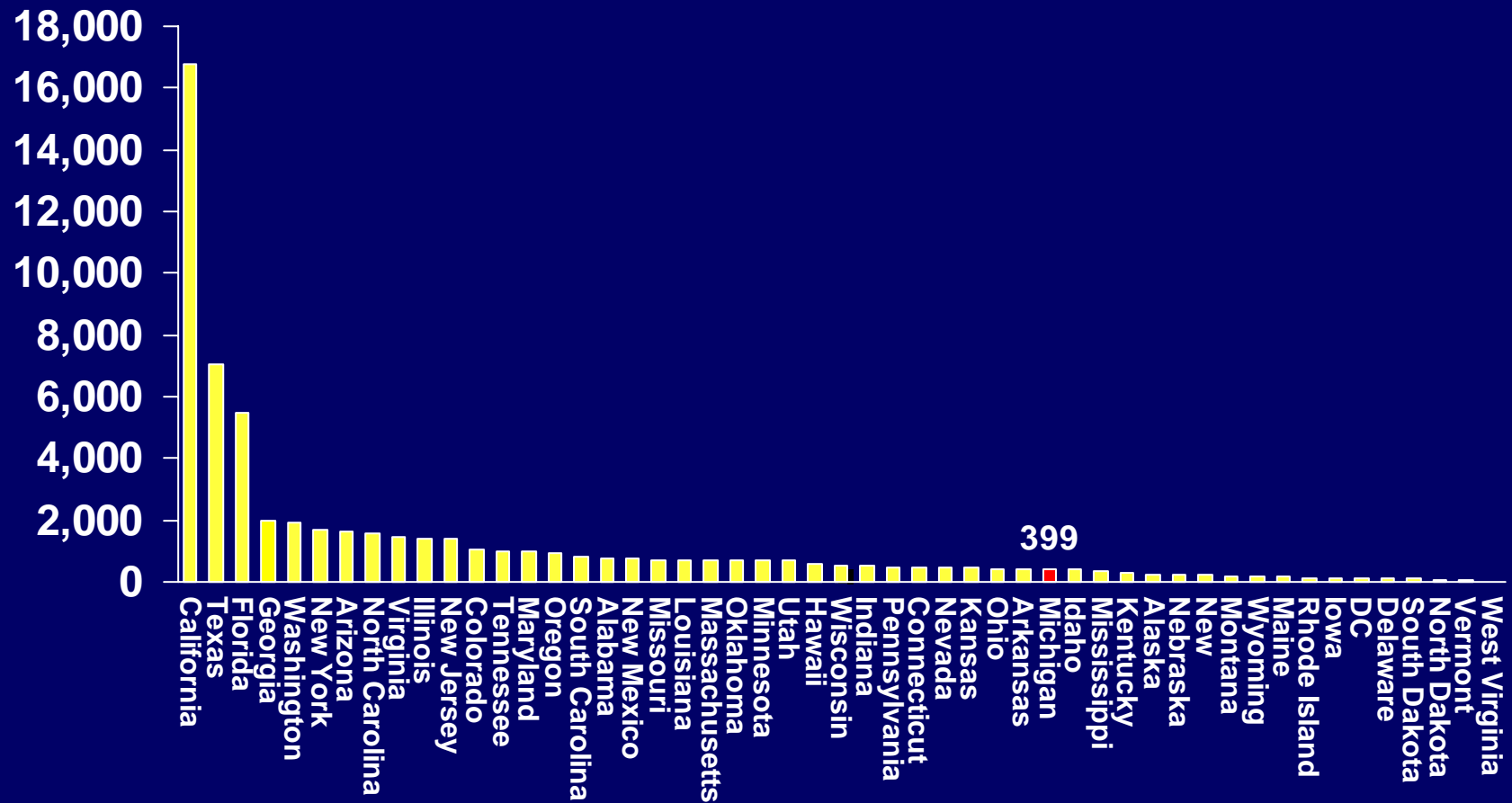
Growth in Michigan Population, 1900-2003

	1990	2000	2003	Change 1990 - 2003	Annual Change
Total Population	9,295	9,938	10,080	8.4%	.63%
0 to 17	2,459	2,596	2,539	3.3%	.25%
18 to 64	5,728	6,123	6,304	10.1%	.74%
65+	1,108	1,219	1,236	11.6%	.84%
White	7,756	7,966	8,211	5.9%	.44%
Black	1,292	1,413	1,447	12.0%	.88%
American Indian, Eskimo, Aleut	56	58	60	7.1%	.53%
Asian and Pacific Islander	105	180	221	110.5%	5.89%
Hispanic	202	324	357	76.7%	4.48%

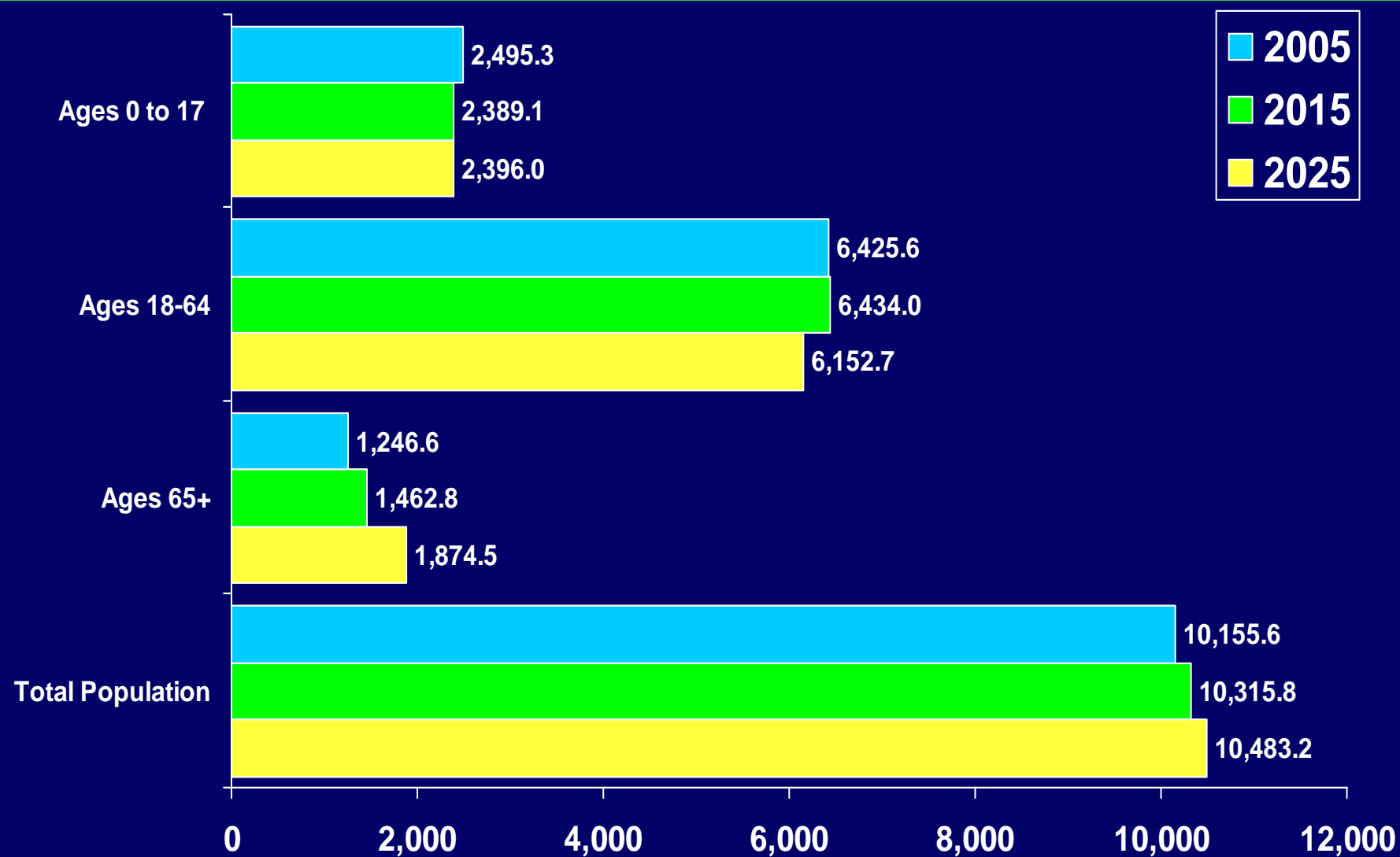
Population in thousands



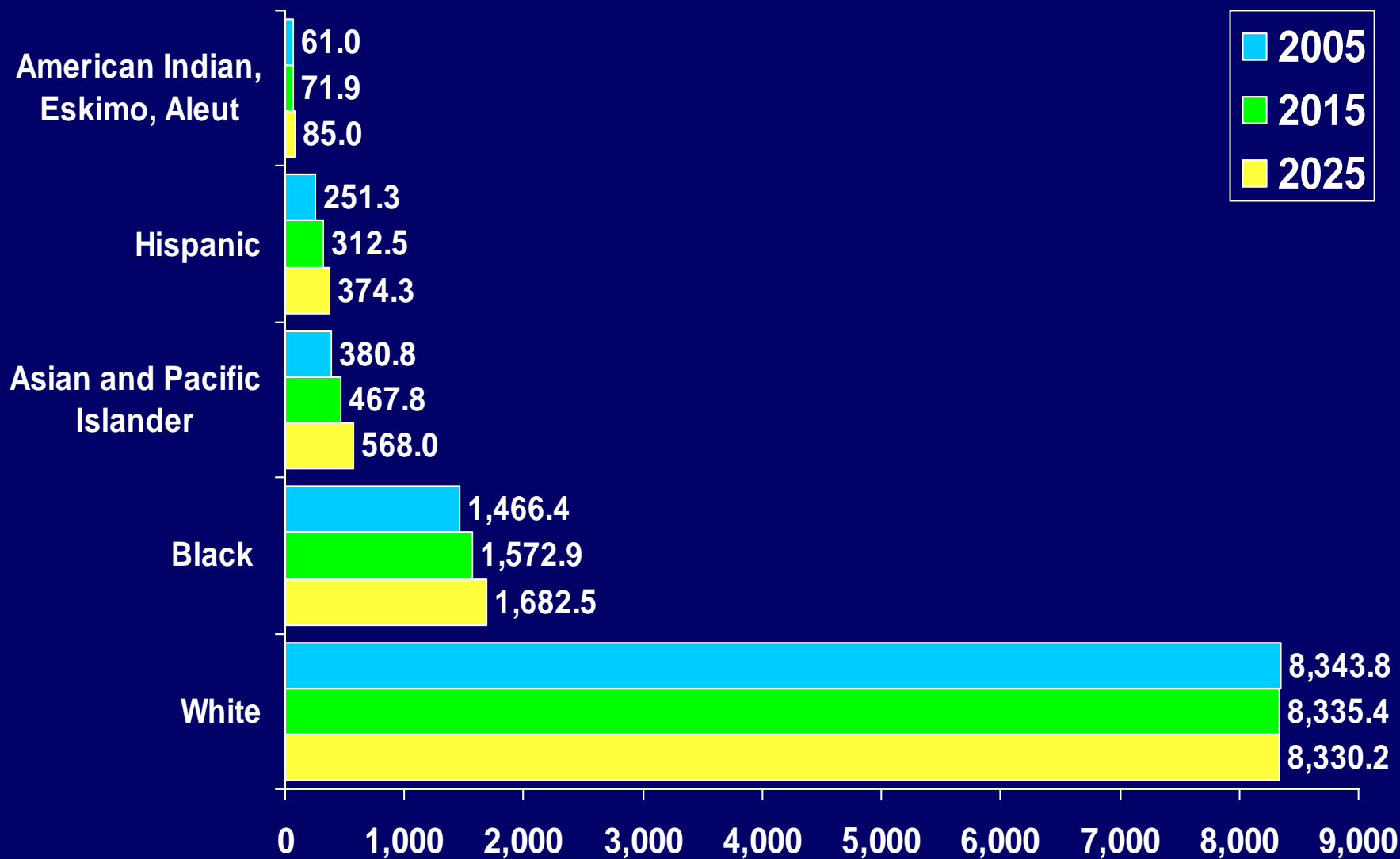
Absolute Population Growth by State: 2000-2025 (in thousands)



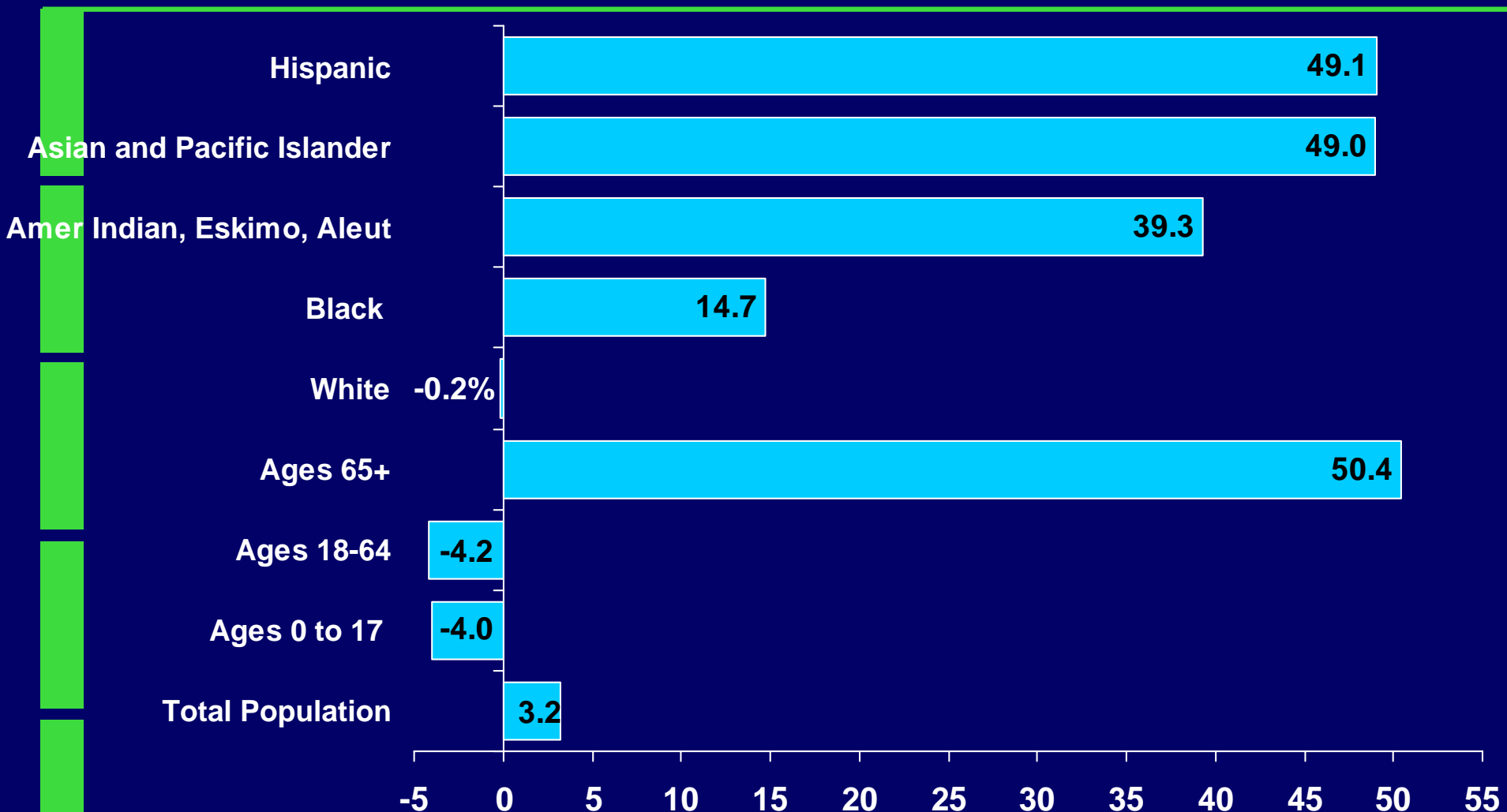
Change in Population from 2005 – 2025 by Age and Overall



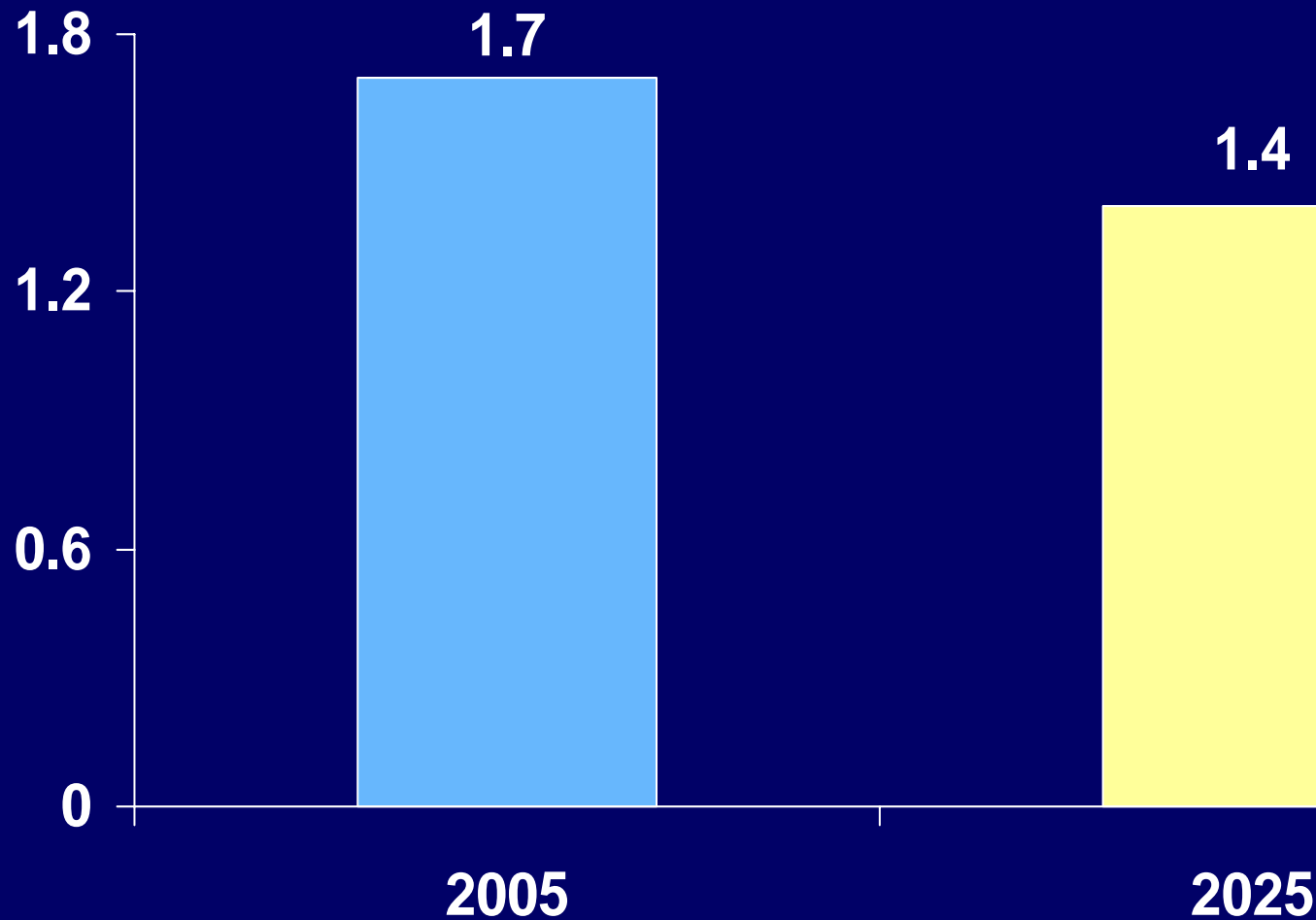
Change in Population from 2005 – 2025 by Race/Ethnicity



Percent Change in Population from 2005 to 2025



Change in the Ratio of Working Age Population (18-64) to Children and Elderly, 2005-2025

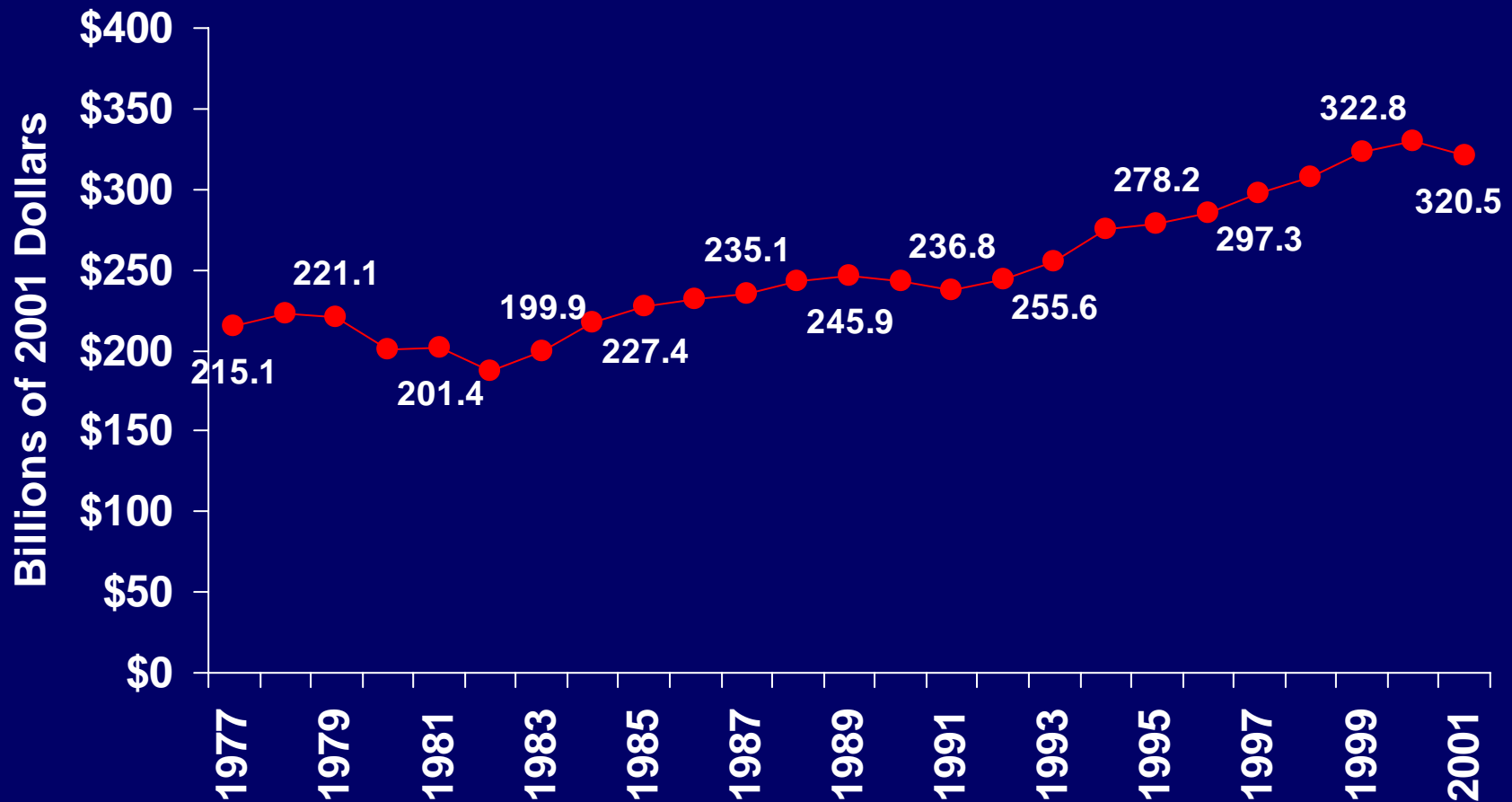


Population Growth & Composition

- Population growth in Michigan has been moderate since the mid 1980s.
- From 2005 to 2025, population growth in Michigan will slow to less than **.2%** annually.
- The white population will decline somewhat.
- Minority populations will grow. Hispanic and Asian populations will grow by almost 50%.
- Overall, the number of children will decline by 4.0%.
- The number of working adults will decline by 4.2%.
- The number of elderly in Michigan will increase by 50% in the next 20 years, from 1.25 million in 2005 to 1.87 million in 2025.

ECONOMIC GROWTH

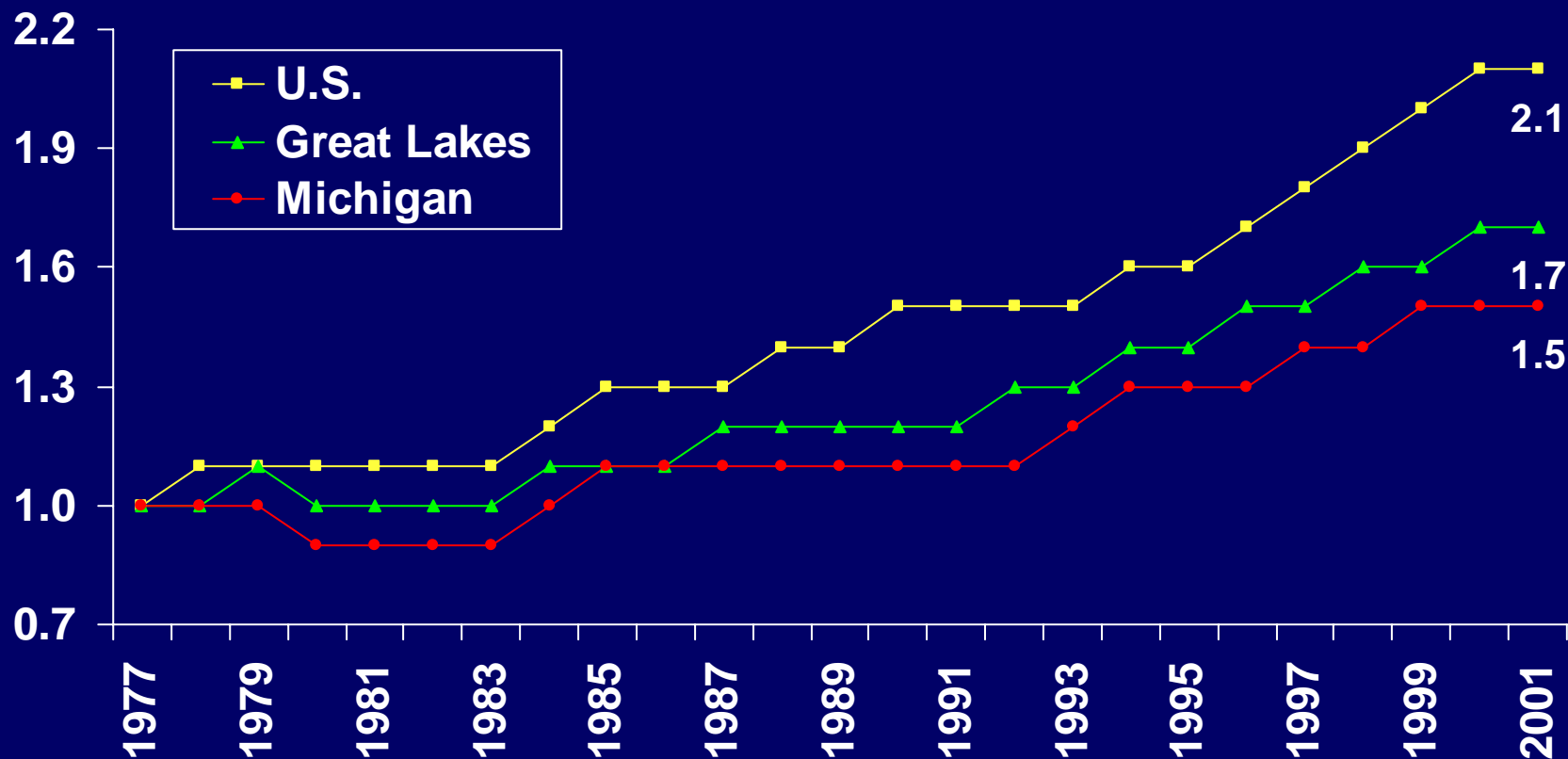
Michigan's Gross State Product Adjusted for Inflation (\$2001), 1977-2001



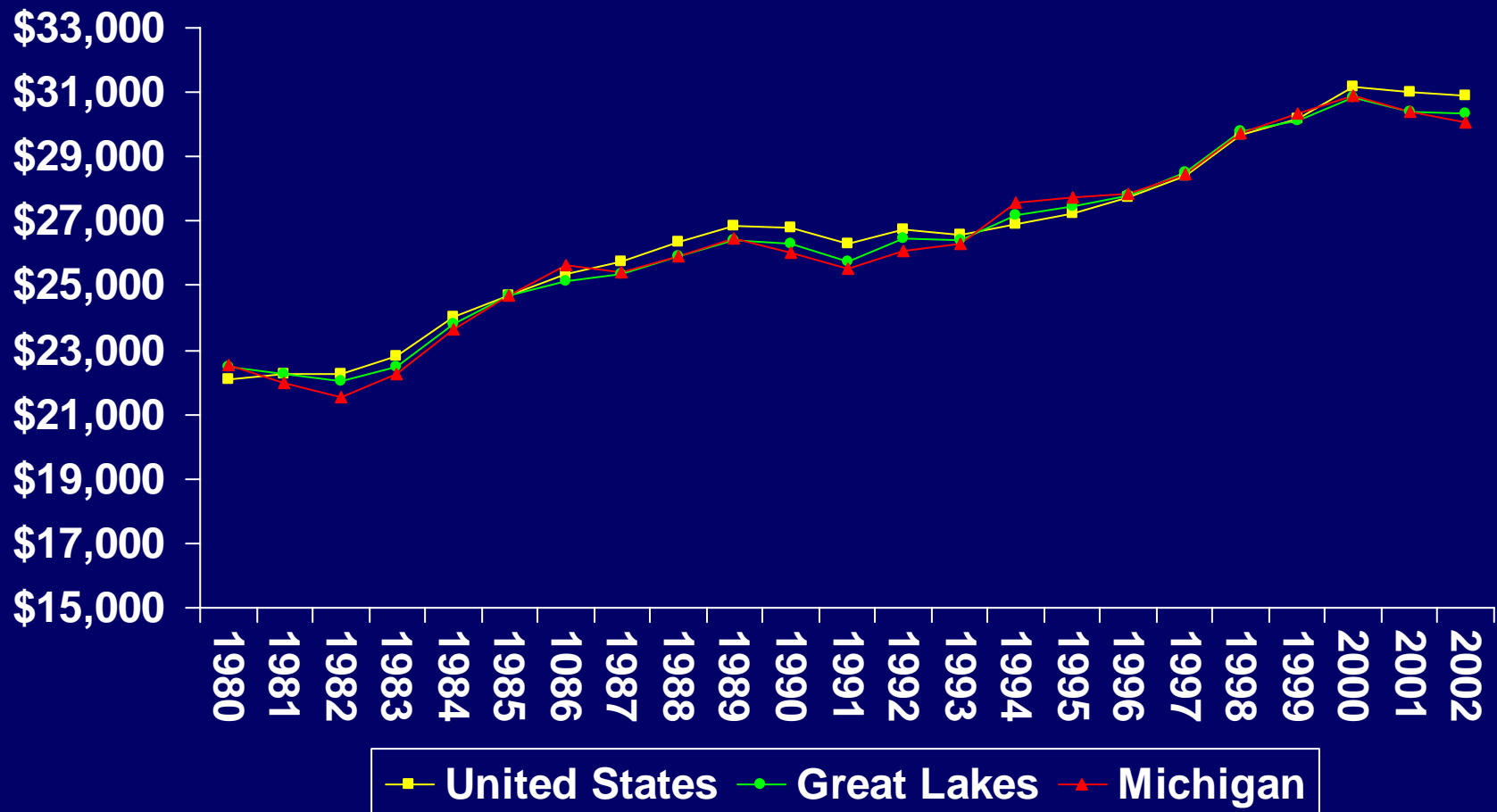
Source: Bureau of Economic Analysis at <http://www.bea.gov> - used BEA's chained (1996) dollars and recomputed values relative to base year 2001.



Change in Real Gross Domestic Product for the U.S., Great Lakes, and Michigan, Indexed: 1977=1



Real (\$2002) per Capita Personal Income, 1980-2002



Source: Bureau of Economic Analysis Online at <http://www.bea.gov> (accessed on 5/12/2004), and the Bureau of Labor Statistics (BLS) for CPI data to adjust for inflation.

Economic Growth Summary

- Since the early 1990s economic growth in Michigan (i.e., GDP and per capita income) has been steady.
- The rate of growth in Michigan GDP has been less than the U.S. average during this time and somewhat less than the average for the Great Lakes region.
- However, growth in per-capita income has matched increases for the U.S. and the region.
- In theory, increasing incomes should lead to an increase in the demand for dental services.

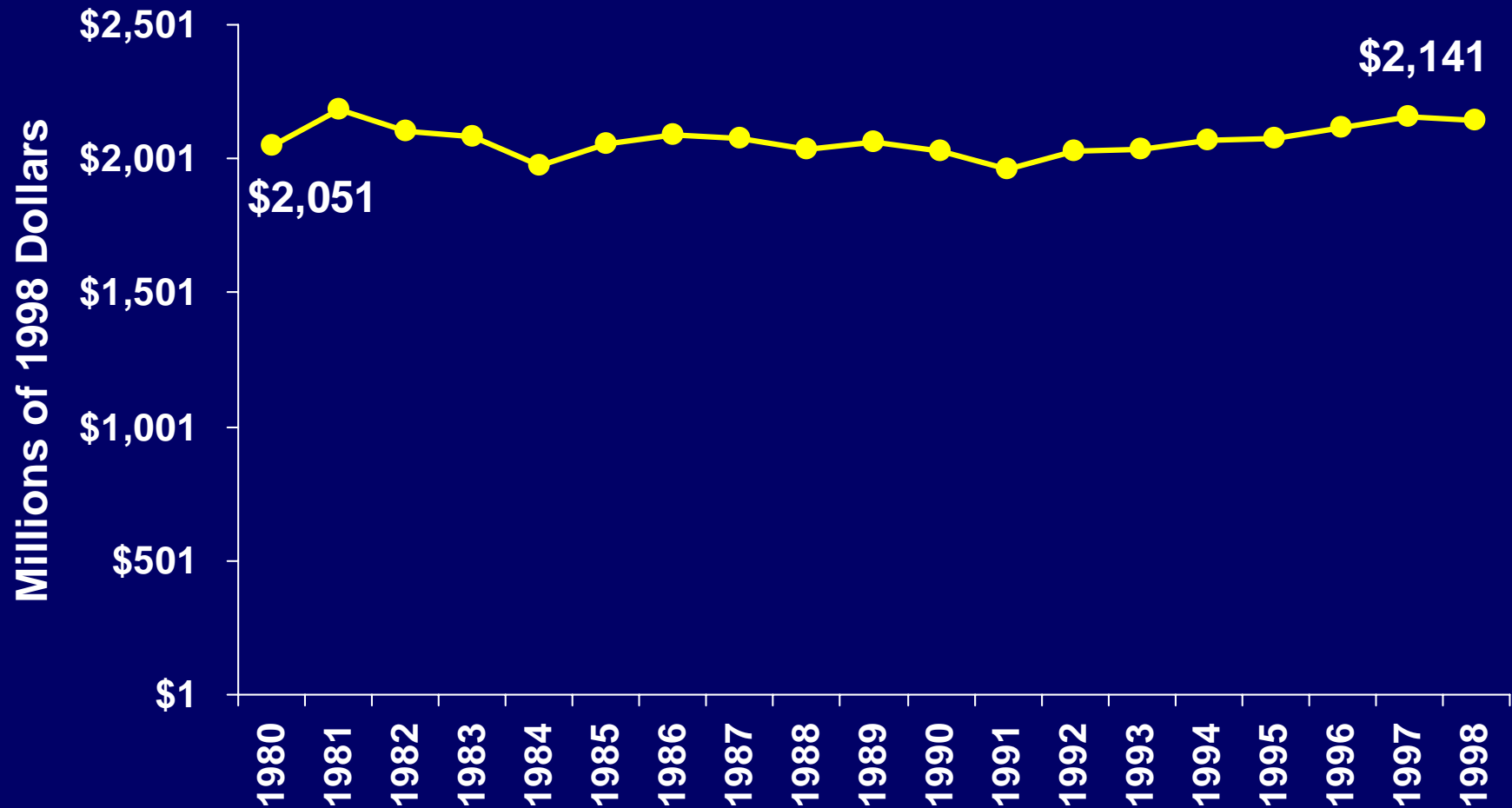


DENTAL PROFILE FOR MICHIGAN

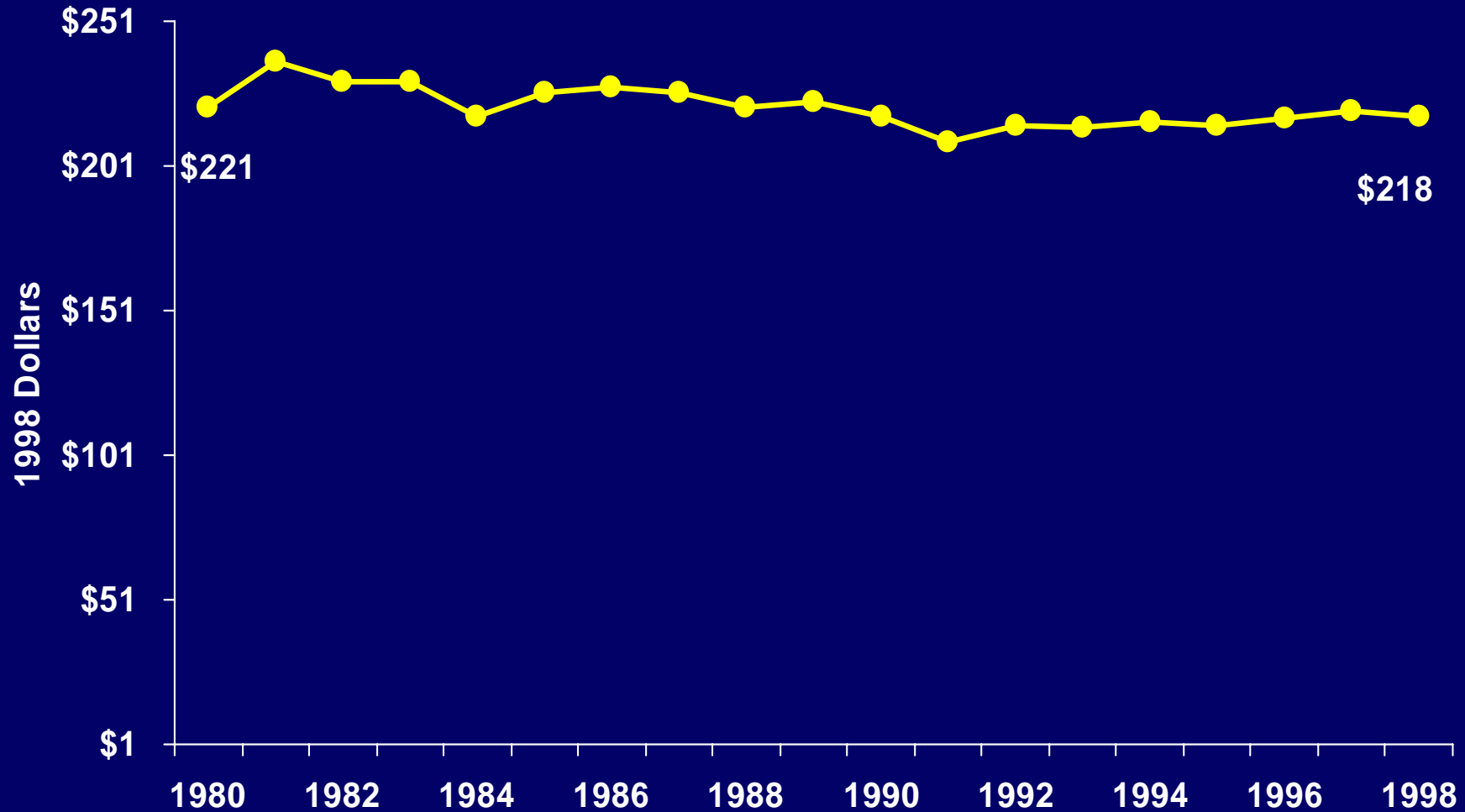
Selected Socioeconomic and Oral Health Characteristics of Michigan and the U.S.

Statistic	Michigan	U.S.
Total Population in 2000 (source=Bureau of the Census, 2000 Census)	9,938,444	281,421,906
Total Dental Expenditures (source=CMS)	\$2.1 Bil (1998)	\$60.7 Bil (2000)
Per Capita Expenditures (source=CMS & Bureau of the Census)	\$218 (1998)	\$216 (2000)
Population with Fluoridated Water	6,568,151	162,067,341
% Population with Public Water – Fluoridated (source=NOHSS 2000)	90.7%	65.8%
% with Dental Visit (ages 18+) (source=BRFSS 1999)	77.2%	67.9%
% Who Received a Prophylaxis (18+) (source=BRFSS 1999)	78.7%	69.0%
% Edentulous (65+) (source=BRFSS 1999)	21.8%	24.4%

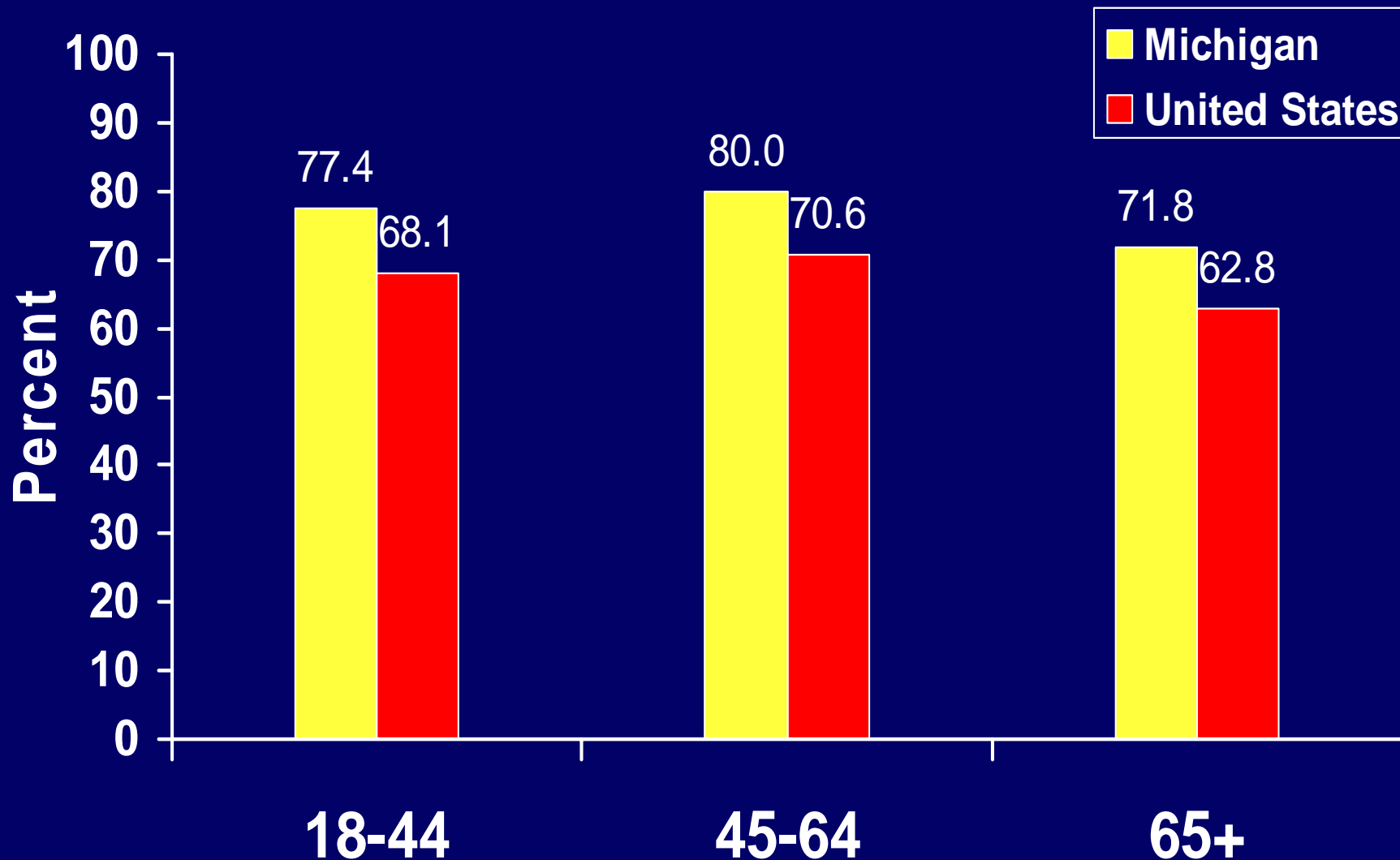
Michigan Dental Expenditures (\$1998) Adjusted for Inflation, 1980-1998



Michigan Per Capita Dental Expenditures (\$1998) Adjusted for Inflation, 1980-1998

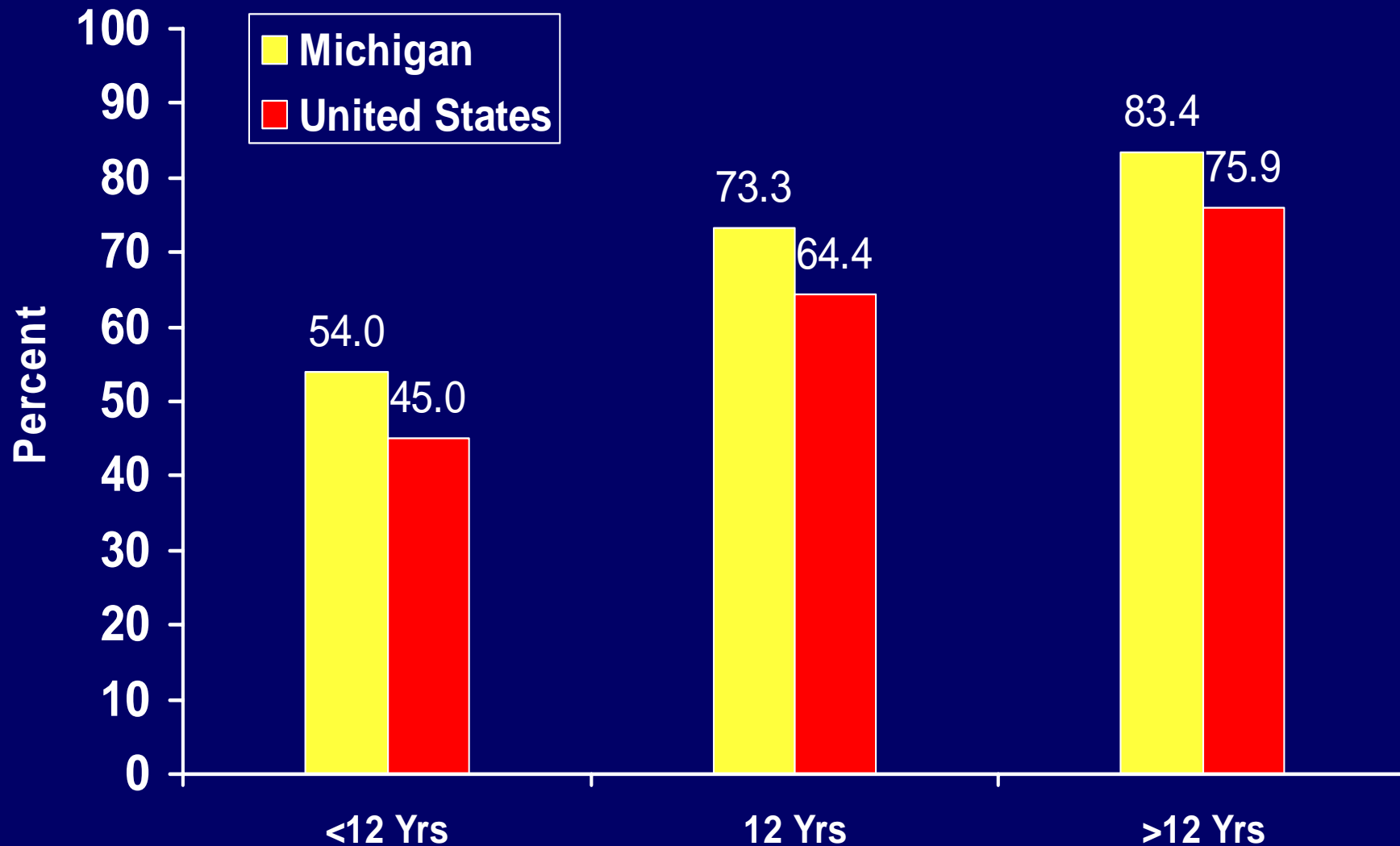


Percent of Michigan Population with a Visit to a Dentist, by Age, 1999



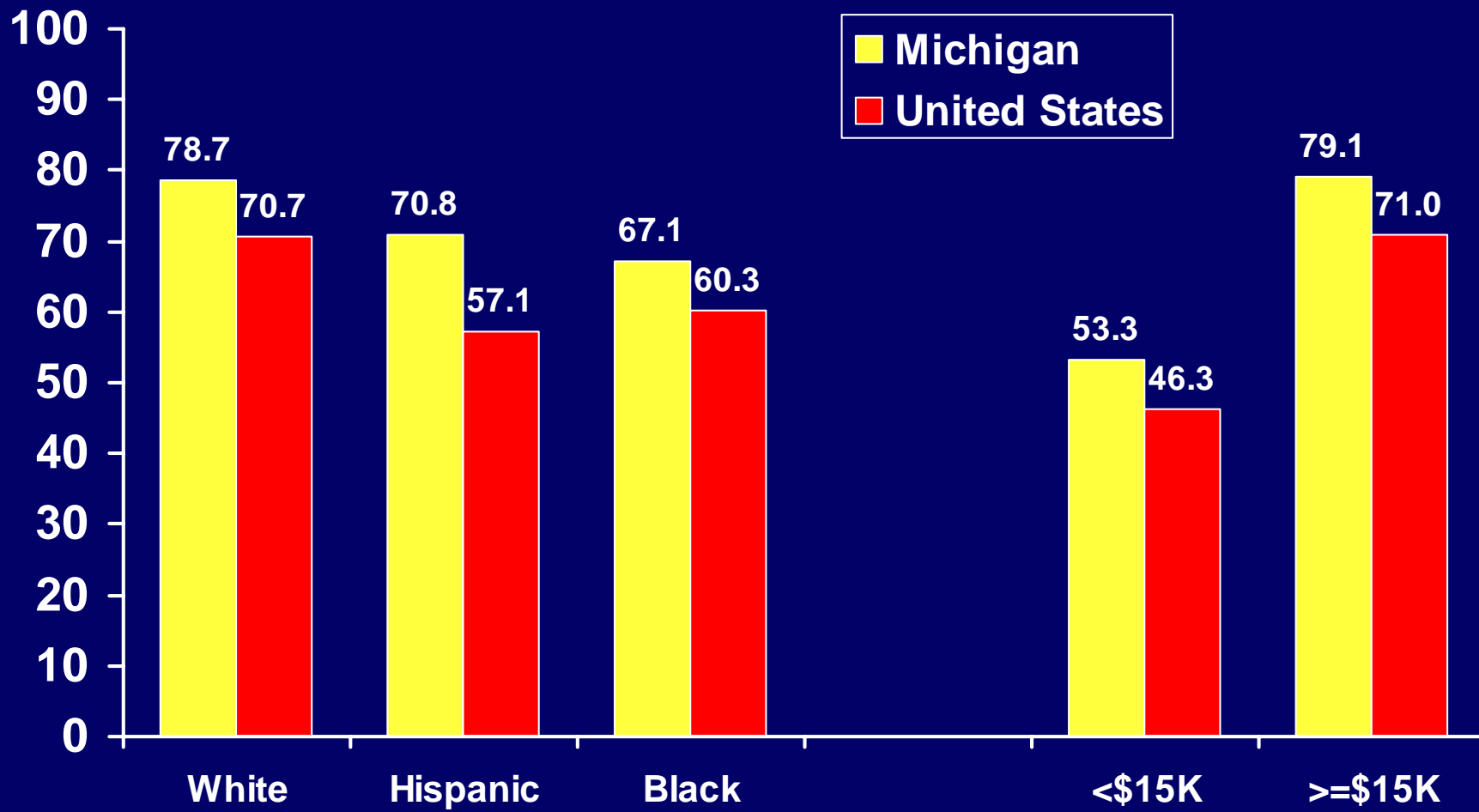
Source: Centers for Disease Control, Behavioral Risk Factor Surveillance System

Percent of Michigan Population 18+ Years Old with a Visit to a Dentist, by Education, 1999



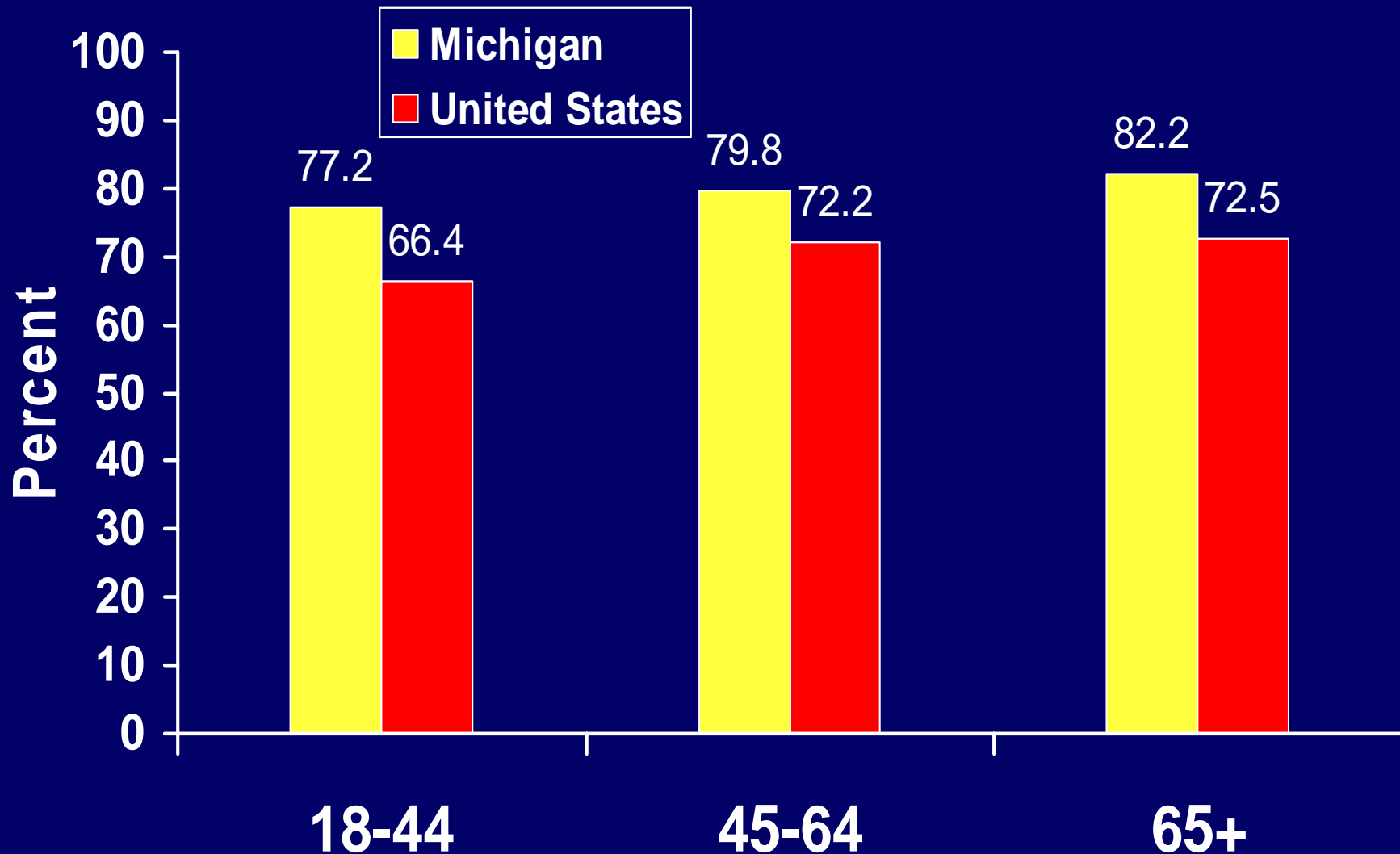
Source: Centers for Disease Control, Behavioral Risk Factor Surveillance System

Percent of Michigan Population 18+ Years Old with a Visit, by Ethnicity and Poverty, 1999



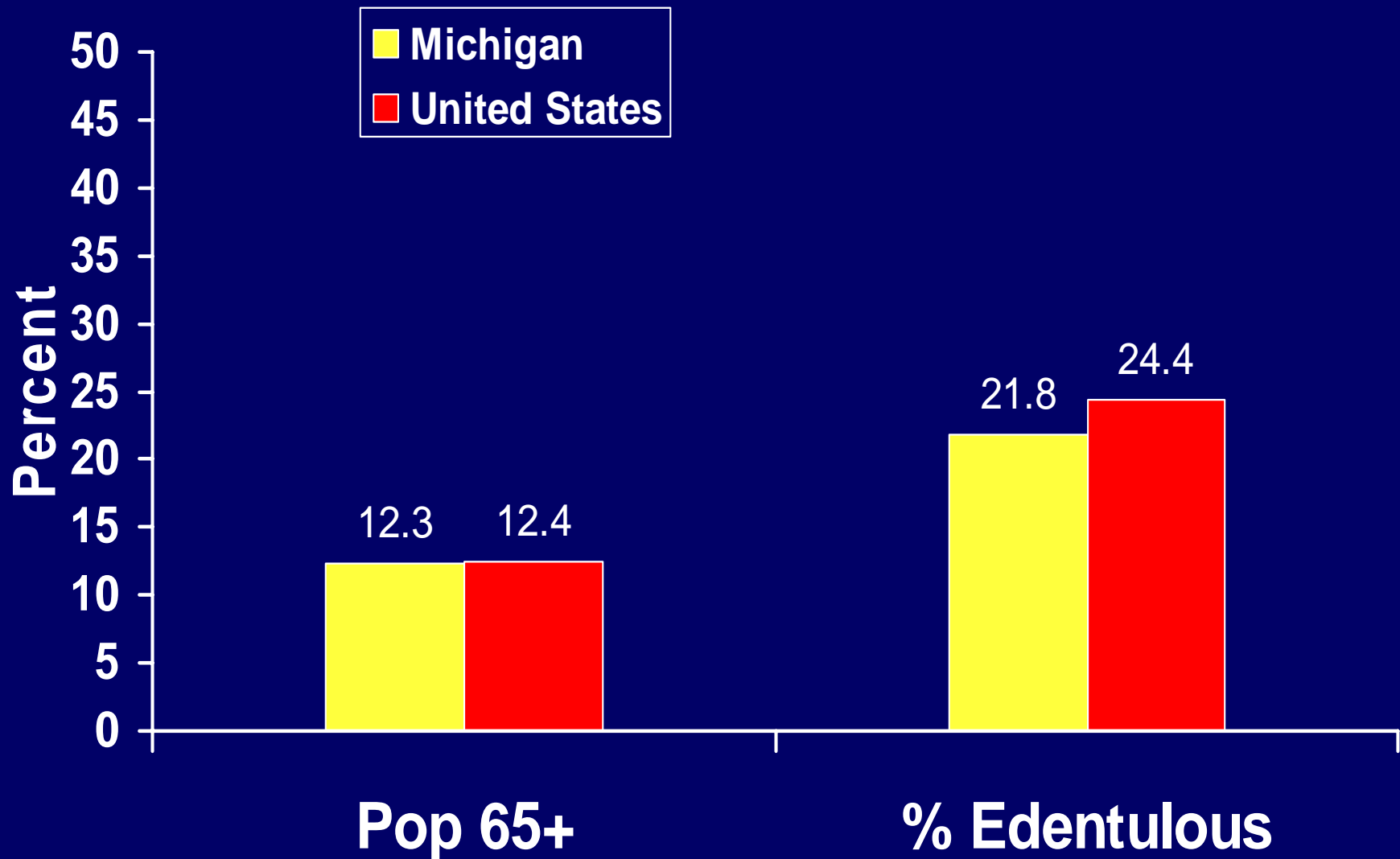
Source: Centers for Disease Control, Behavioral Risk Factor Surveillance System

Percent of Michigan Population with a Prophylaxis, by Age, 1999



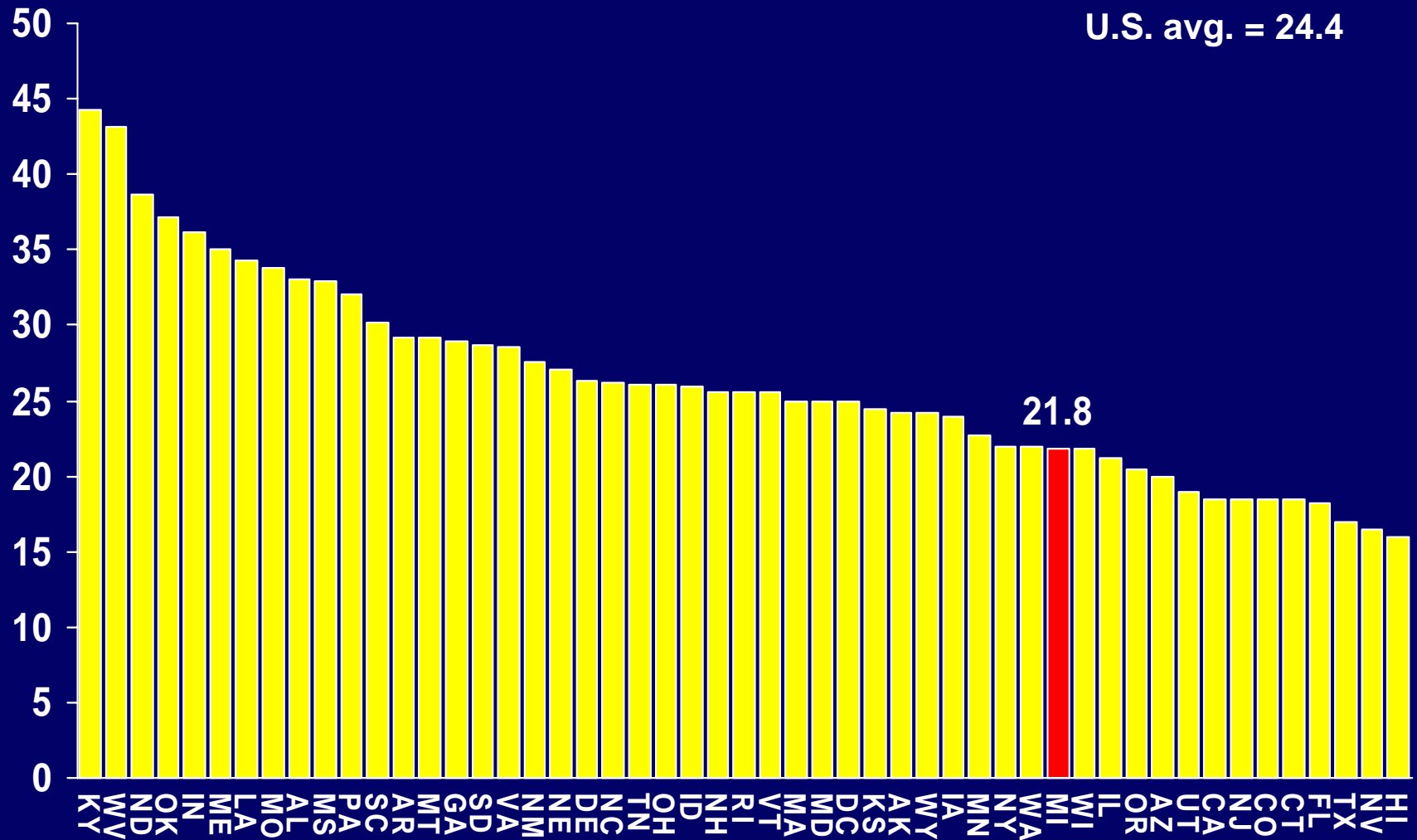
Source: Centers for Disease Control, Behavioral Risk Factor Surveillance System

Percent of Michigan Population 65+, 2000 and percent edentulous among 65+, 1999

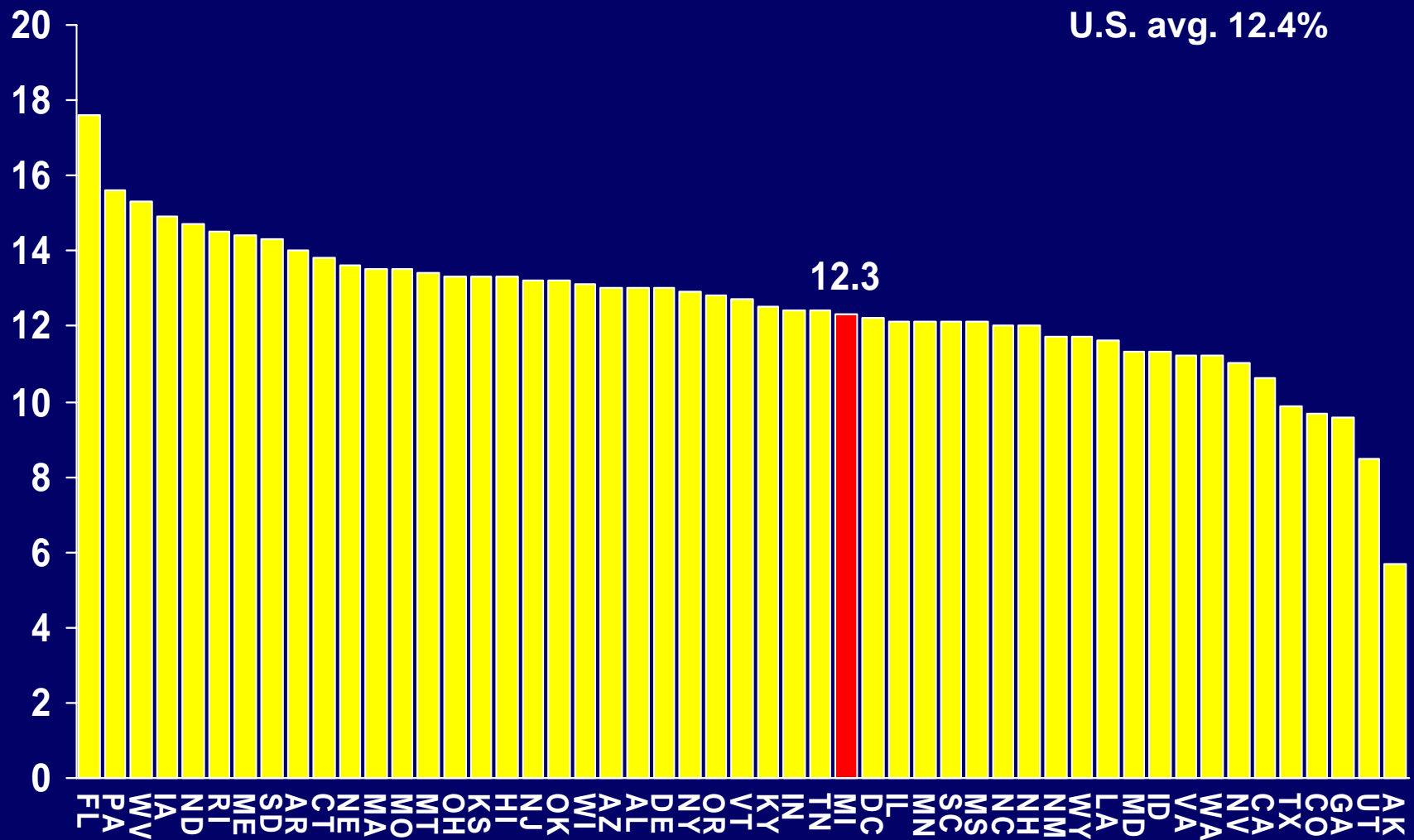


Source: Centers for Disease Control, Behavioral Risk Factor Surveillance System

Percent edentulous 65+, by State, 1999



Percent of population 65+, by State, 2000



Percent Edentulous 65+

- Estimates from 1999 Behavioral Risk Factor Surveillance System.
- State-based random digit dialed telephone survey of non-institutionalized U.S. civilian population 18 years old and older.
- Results are self-reported data.

Dental Profile Summary

- Although total real dental expenditures increased somewhat since 1980, per-capita expenditures were somewhat lower in 1998 than in 1980.
- This occurred in spite of an increase in Michigan GDP and a 33 percent increase in real per-capital income.
- Part of the explanation may be related to relatively high utilization of dental services in Michigan. There isn't as much room for growth.

Dental Profile Summary

- Per capita dental expenditures for Michigan are close to the U.S. average.
- The percent of the population visiting a dentist in Michigan is about nine percentage points higher than the U.S. average for those 18 years old and older
- The percent with a visit was higher in Michigan for every demographic and economic subgroup examined.



III. SUPPLY OF DENTAL CARE



Practicing Dentists

Practicing Dentists Overview

- The focus now shifts to the supply of dental care and the dental workforce.
- First, to set the context, regional and state variation in workforce will be described.
- Then, Michigan workforce will be considered in detail.

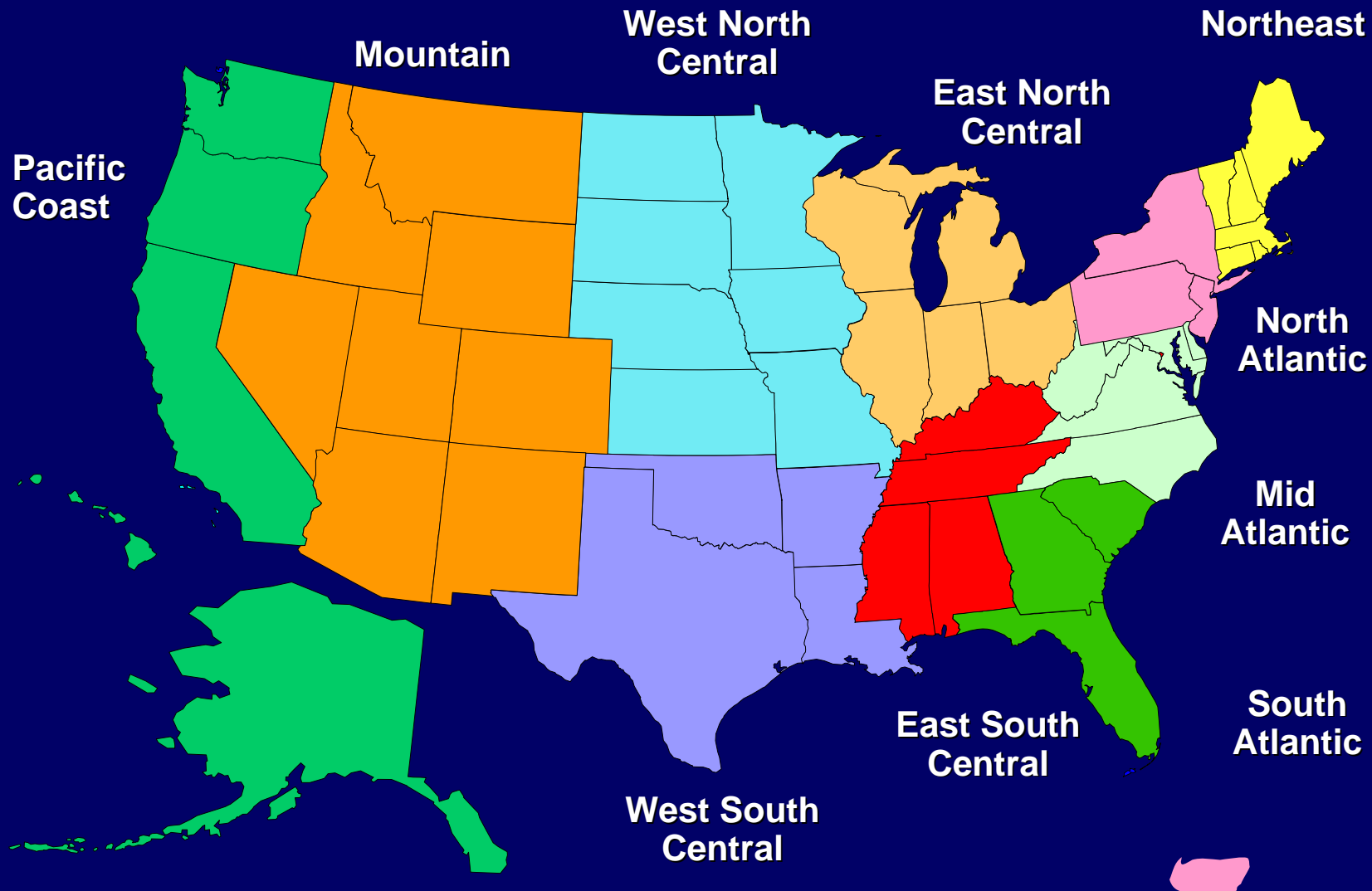
Practicing Dentists Overview

- Next, variation in workforce within Michigan will be described.
- Finally, workforce projections for Michigan will be presented.

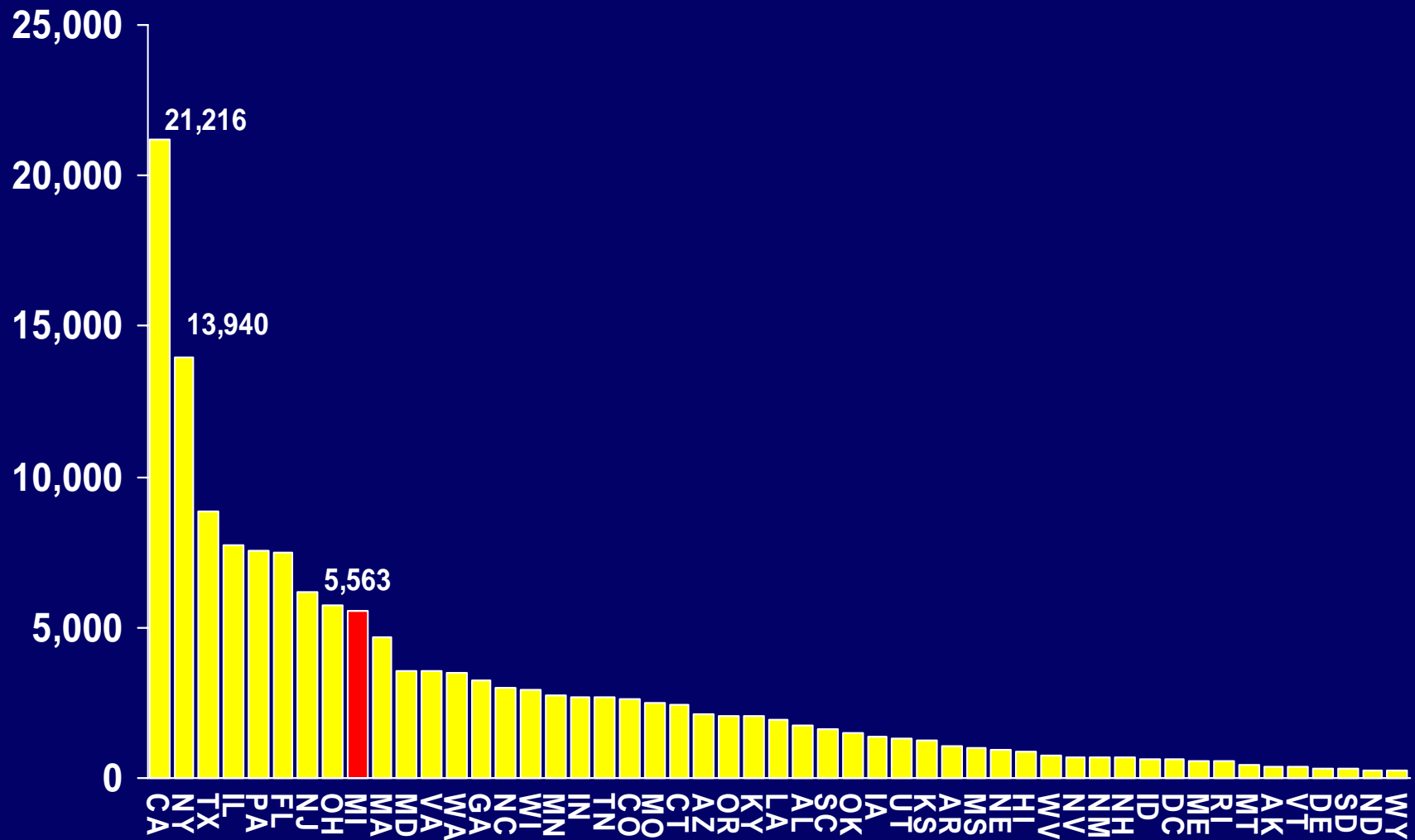


GEOGRAPHIC VARIATION AND CHANGE IN DENTIST WORKFORCE

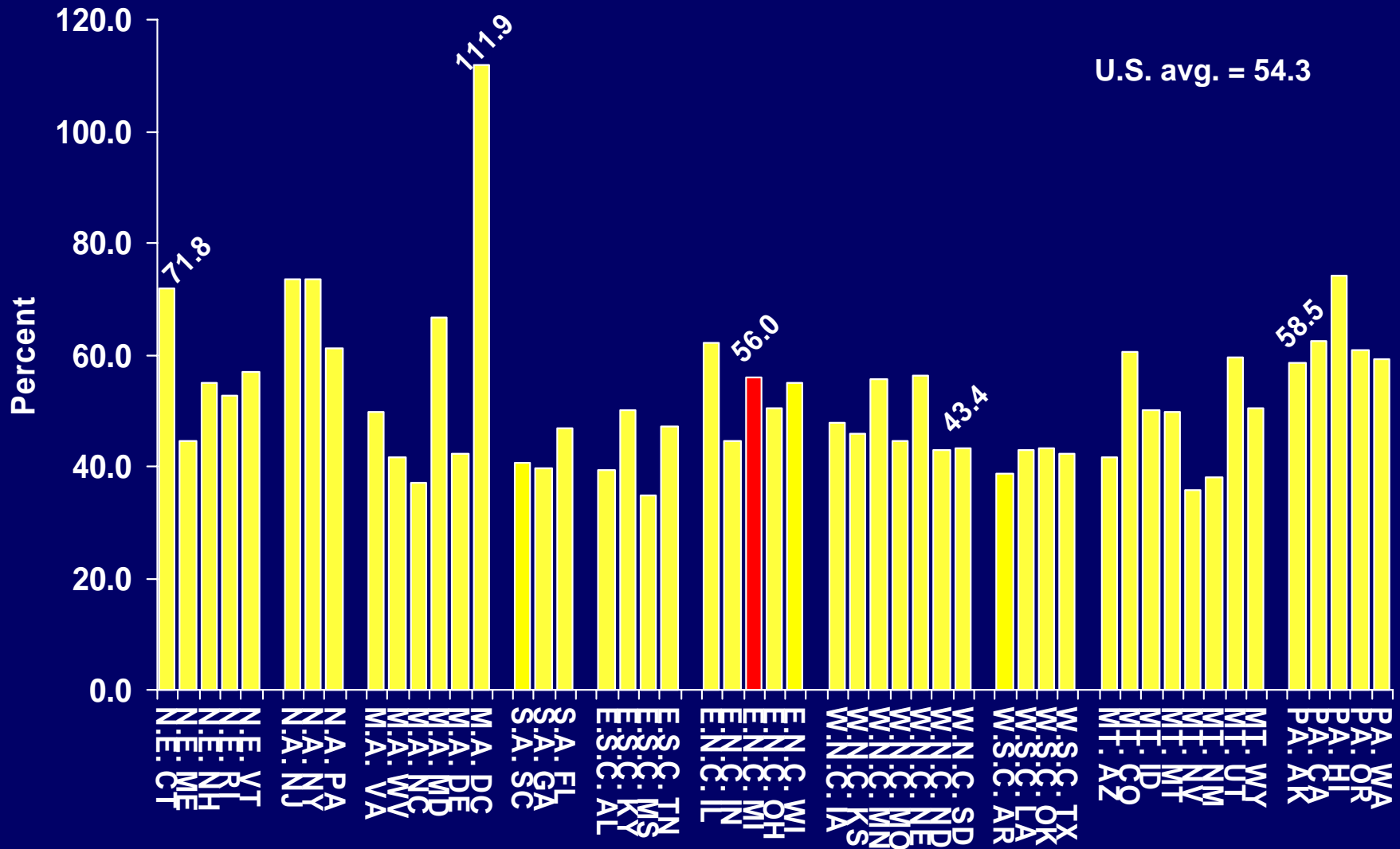
U.S. Census Regions



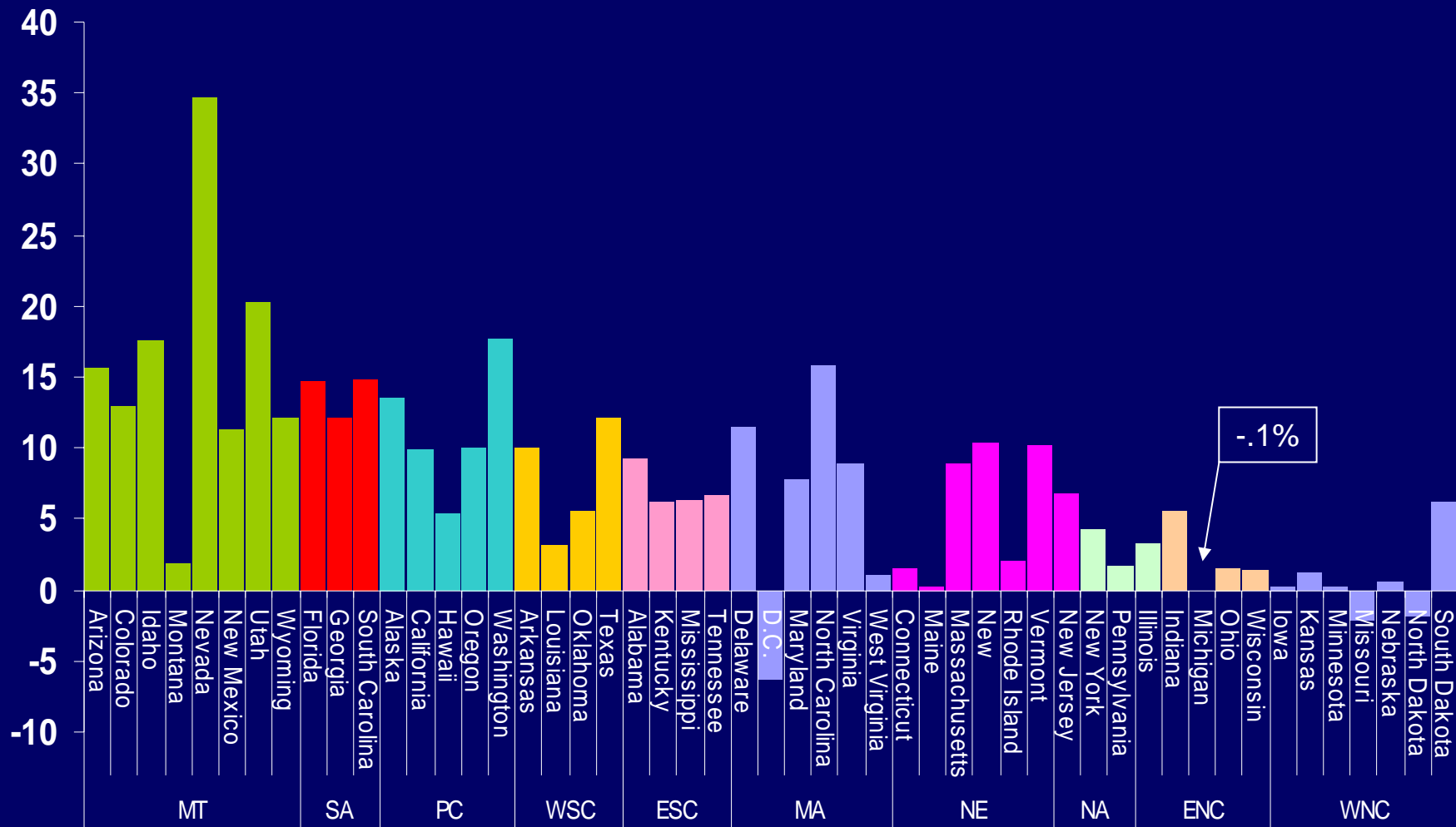
Number of Private Practitioners, by State, 2000



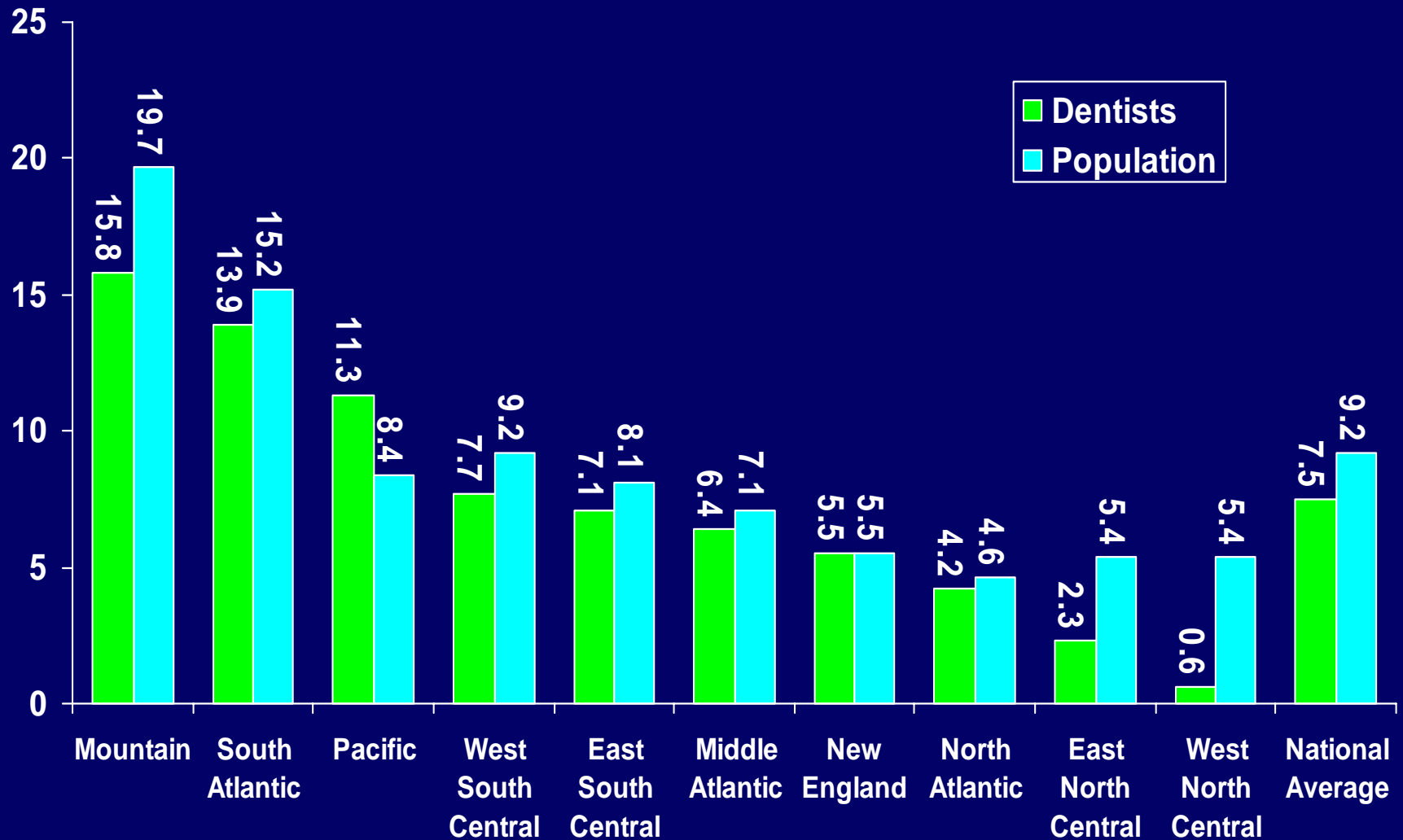
Number of Private Practice Dentists per 100,000 Population, by State and Region, 2000



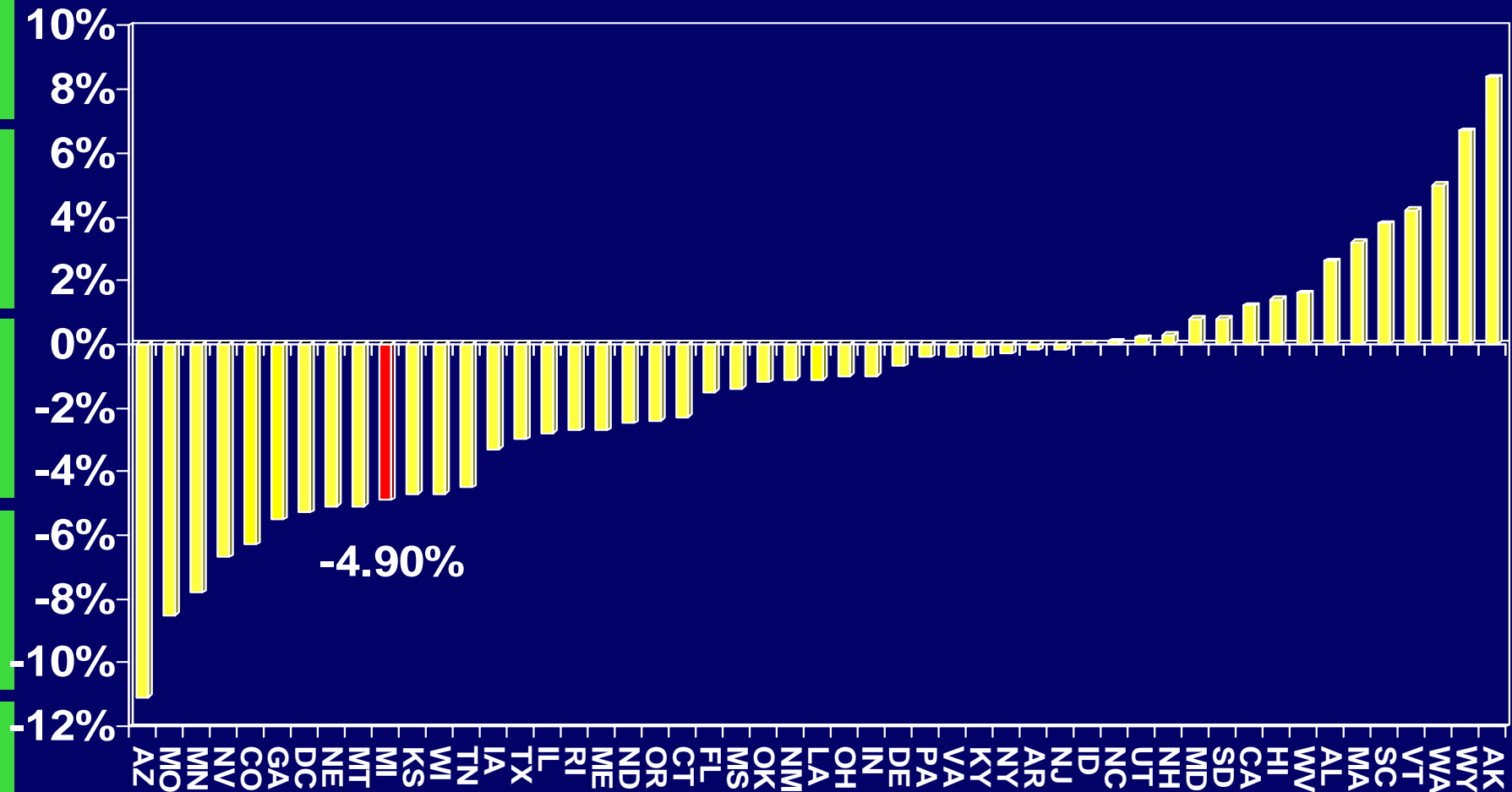
Percent Change in the Number of Practicing Dentists from 1993 to 2000, by State and Region



Percent Change in Dentists and Population from 1993 to 2000, by Region



Percent Change in Dentist-to-Population Ratios, 1993-2000



Practicing Dentists

- The number of dentists per 100,000 population in Michigan is somewhat higher than the U.S. average.
- In the East North Central region, Illinois has the highest concentration of dentists, Indiana has the lowest, and Ohio, Wisconsin and Michigan fall in between.
- During the 1990s, the dentist-to-population ratio in Michigan decreased by 4.9% - the 10th largest decline among all states.



SOCIO-DEMOGRAPHIC AND PRACTICE CHARACTERISTICS OF MICHIGAN DENTISTS

Demographic Characteristics of Private Practice Dentists, 2000

Statistic	Michigan	U.S.
Total No. of Prof. Active Dentists	5,913	166,383
Total No. of Private Practitioners	5,563	152,798
PP DDS per 100,000 Population	56.0	54.3
% General Practitioners	84.6%	81.3%
% <35 Years of Age	12.2%	13.1%
% 35-44 Years of Age	29.1%	27.8%
% 45-54 Years of Age	32.4%	32.6%
% 55-64 Years of Age	17.2%	17.3%
% 65+ Years of Age	9.2%	9.1%

Economic Characteristics of Private Practice Dentists, 2000

Statistic	Michigan	U.S.
% Female	14.2%	15.1%
% Full-time (30+ Hours/Week)	85.0%	86.0%
Avg. GP Gross Billings	\$486,460 (ENC region*)	\$500,910
Avg. GP Net Income	\$174,750 (ENC region*)	\$166,460
Avg. No. of Hygienists (GPs)	1.5	1.2
Avg. No. of Chairside Assts. (GPs)	1.5	1.5

* Region is reported because there were not enough Wisconsin dentists to be statistically reliable.

Practicing Dentists – Cont.

- The age distribution of Michigan dentists is similar to the Nation as a whole.
- 61.5 percent of practitioners are between 35 and 54 years old.
- There is a lower percentage of specialists in Michigan.

Practicing Dentists – Cont.

- Net incomes of GP dentists in the East North Central region are higher than for the country as a whole and gross billings are lower.
- Michigan dentists make more use of hygienists than the U.S. average.
- This could indicate that they have slightly higher productivity than the U.S. average.

Practicing Dentists – Cont.

In the future,

- The average age of Michigan dentists will increase.
- Dentists in Michigan will become more productive as technical advances become available (see appendix A for an explanation of productivity).
- The percent of female dentists in Michigan will increase (see appendix B for trends by gender).

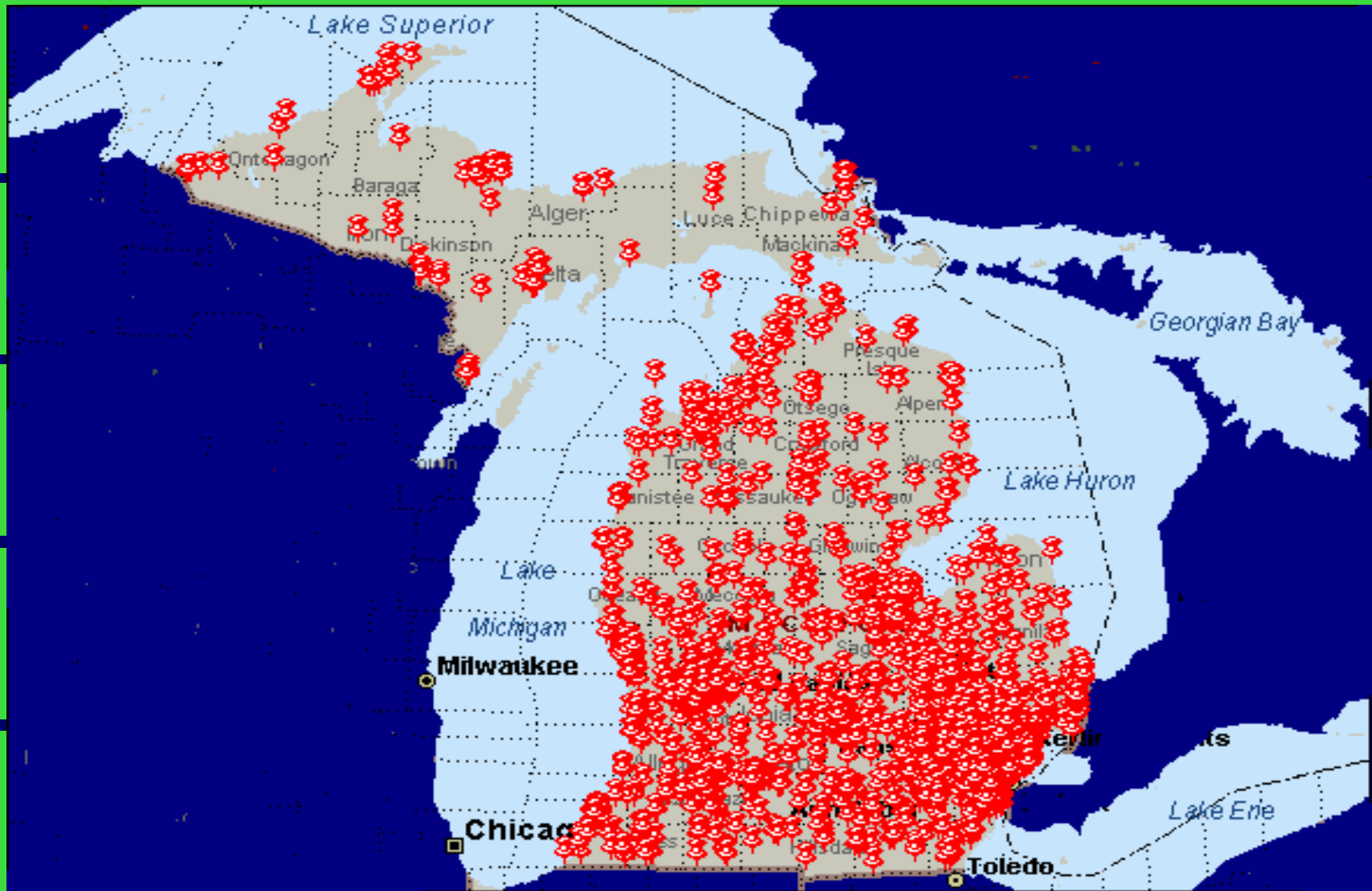


LOCATION OF DENTISTS WITHIN MICHIGAN

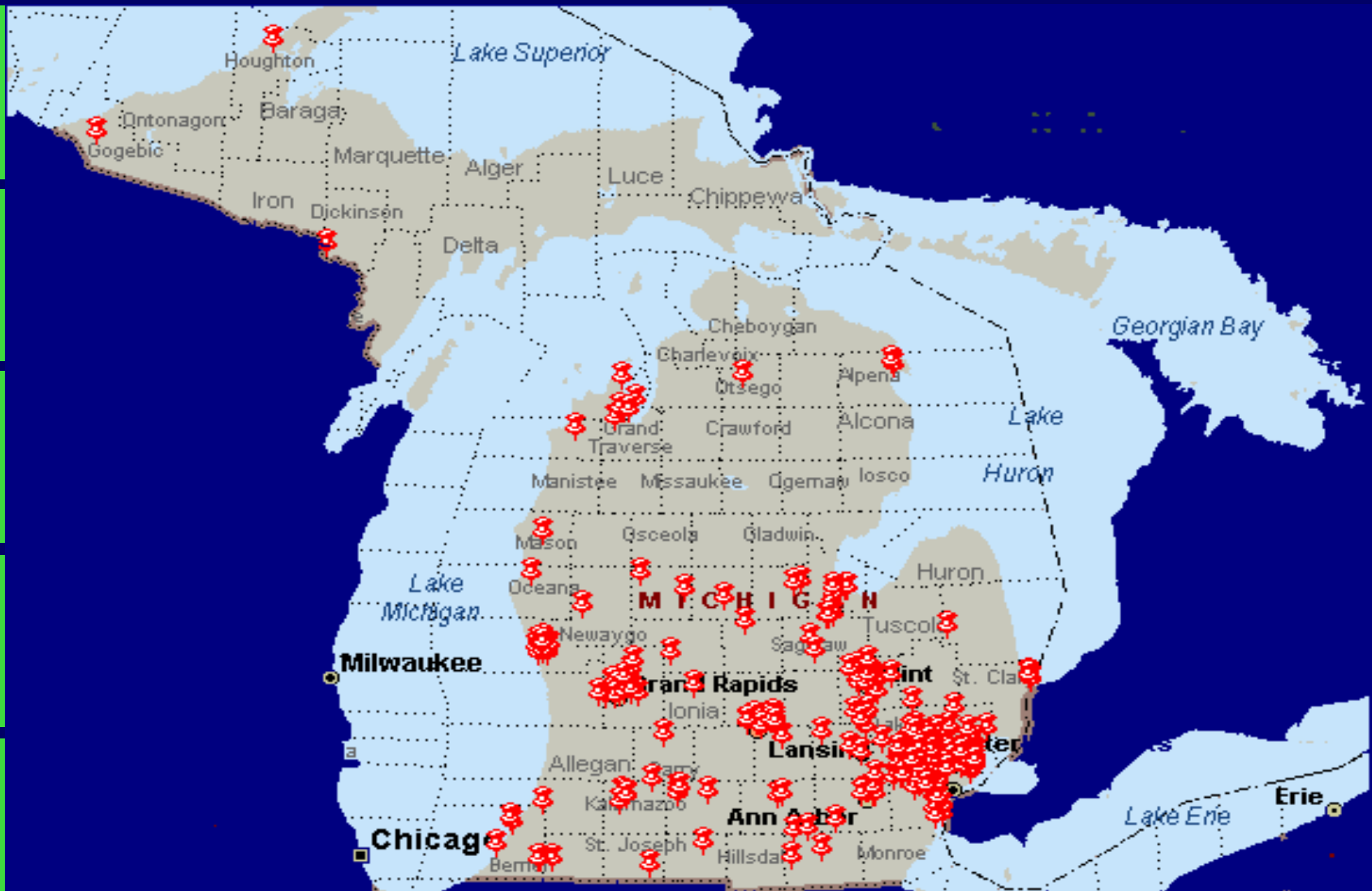
Location of Michigan Dentists

- The next slide shows the 2001 practice location of all Michigan dentists.
- The following slides show the practice location of five graduation year cohorts starting with those who graduated prior to 1960 and ending with those who graduated between 1990 and 2001.

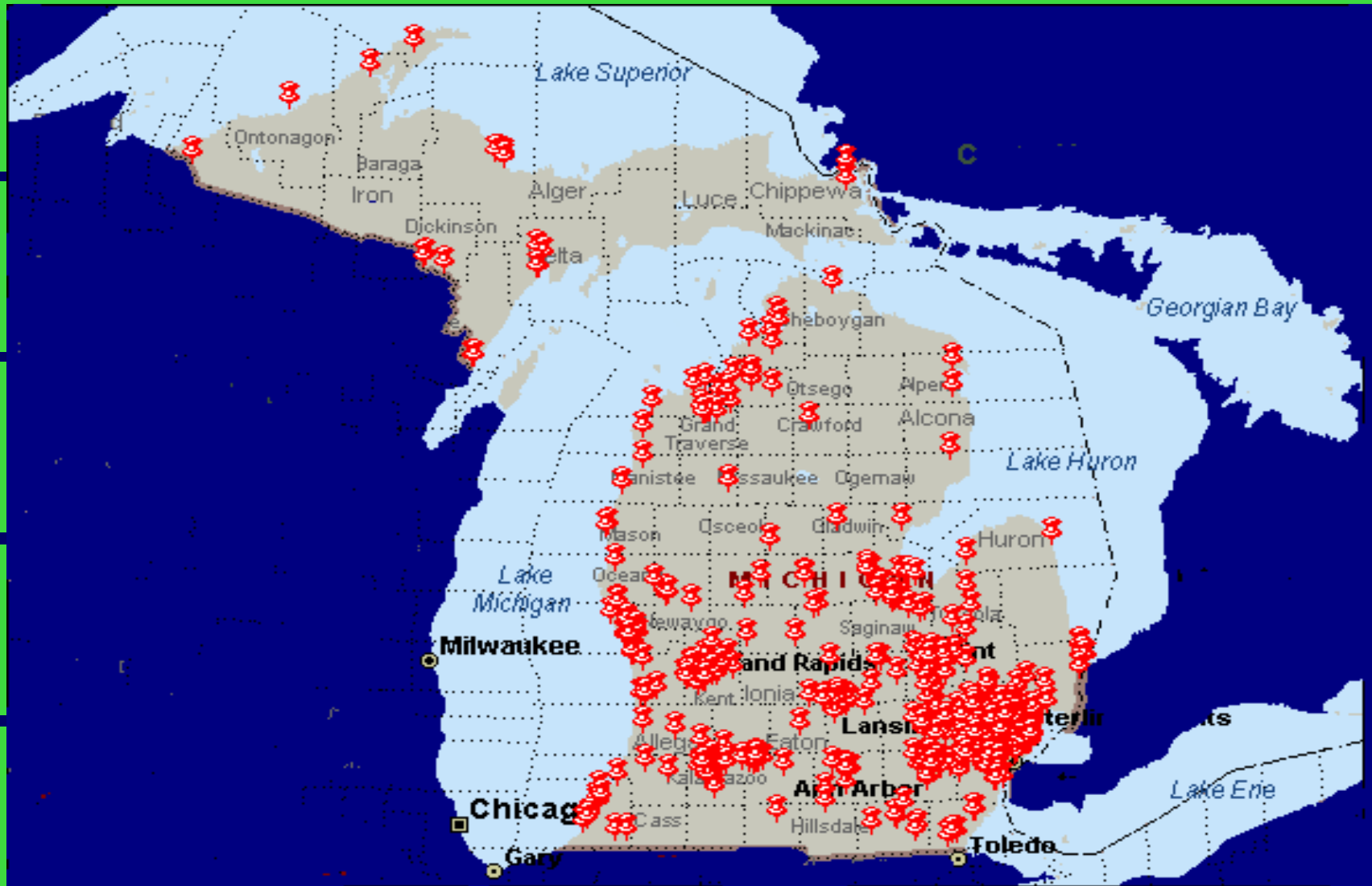
Locations of Michigan Private Practitioners, 2001



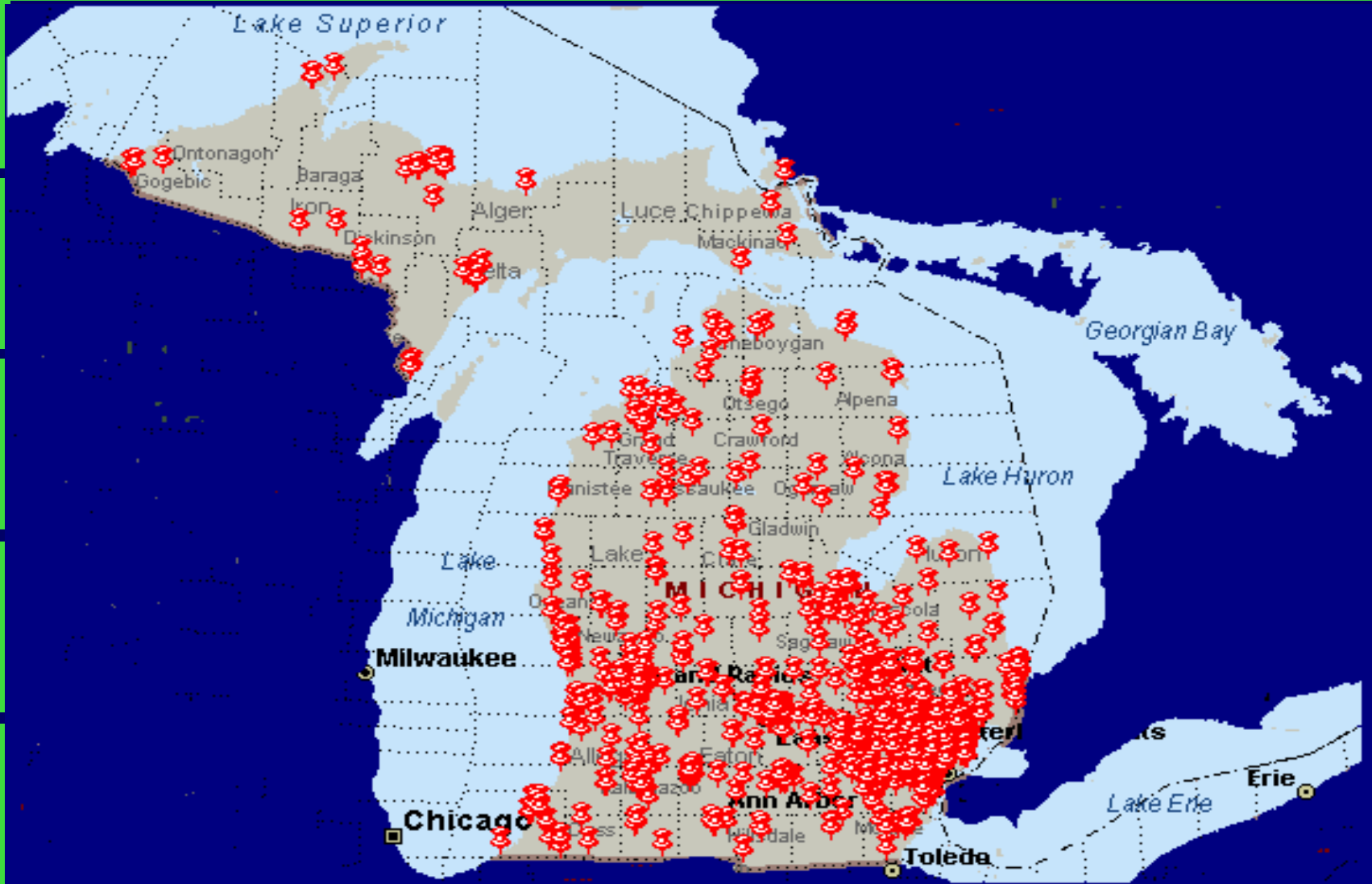
Locations of Michigan Private Practitioners Who Graduated before 1960



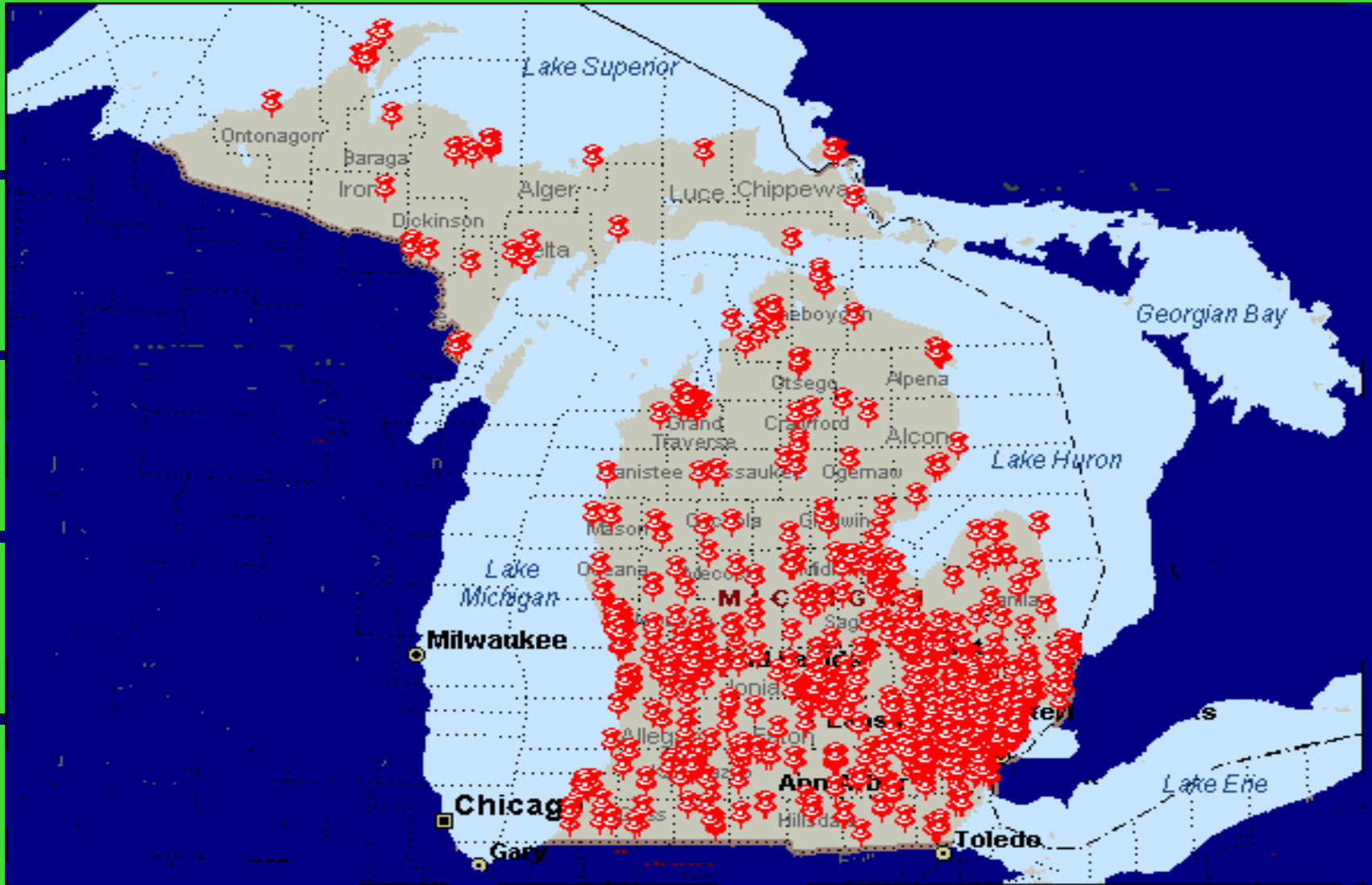
Locations of Michigan Private Practitioners Who Graduated 1960 - 1969



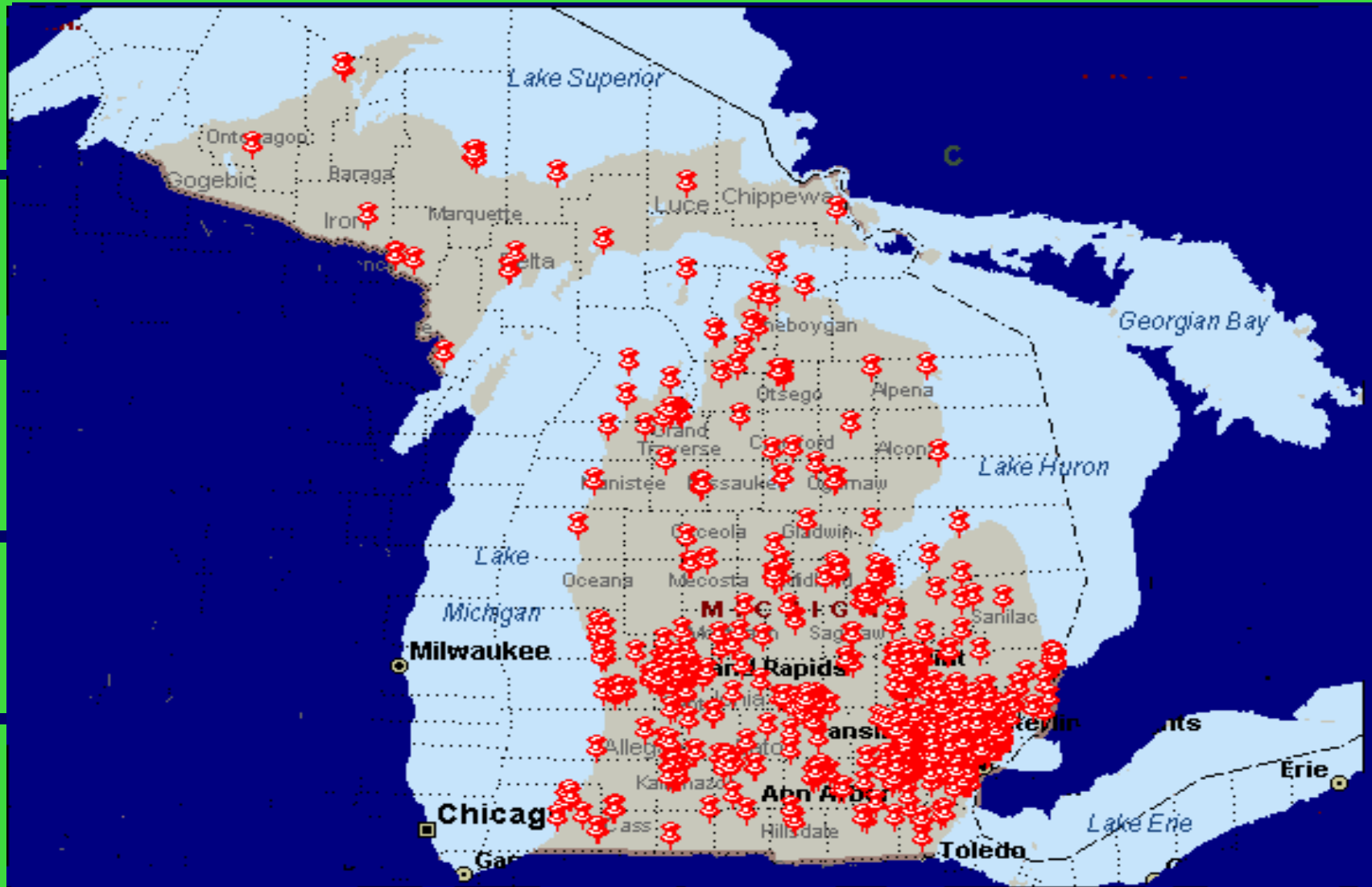
Locations of Michigan Private Practitioners Who Graduated 1970 - 1979



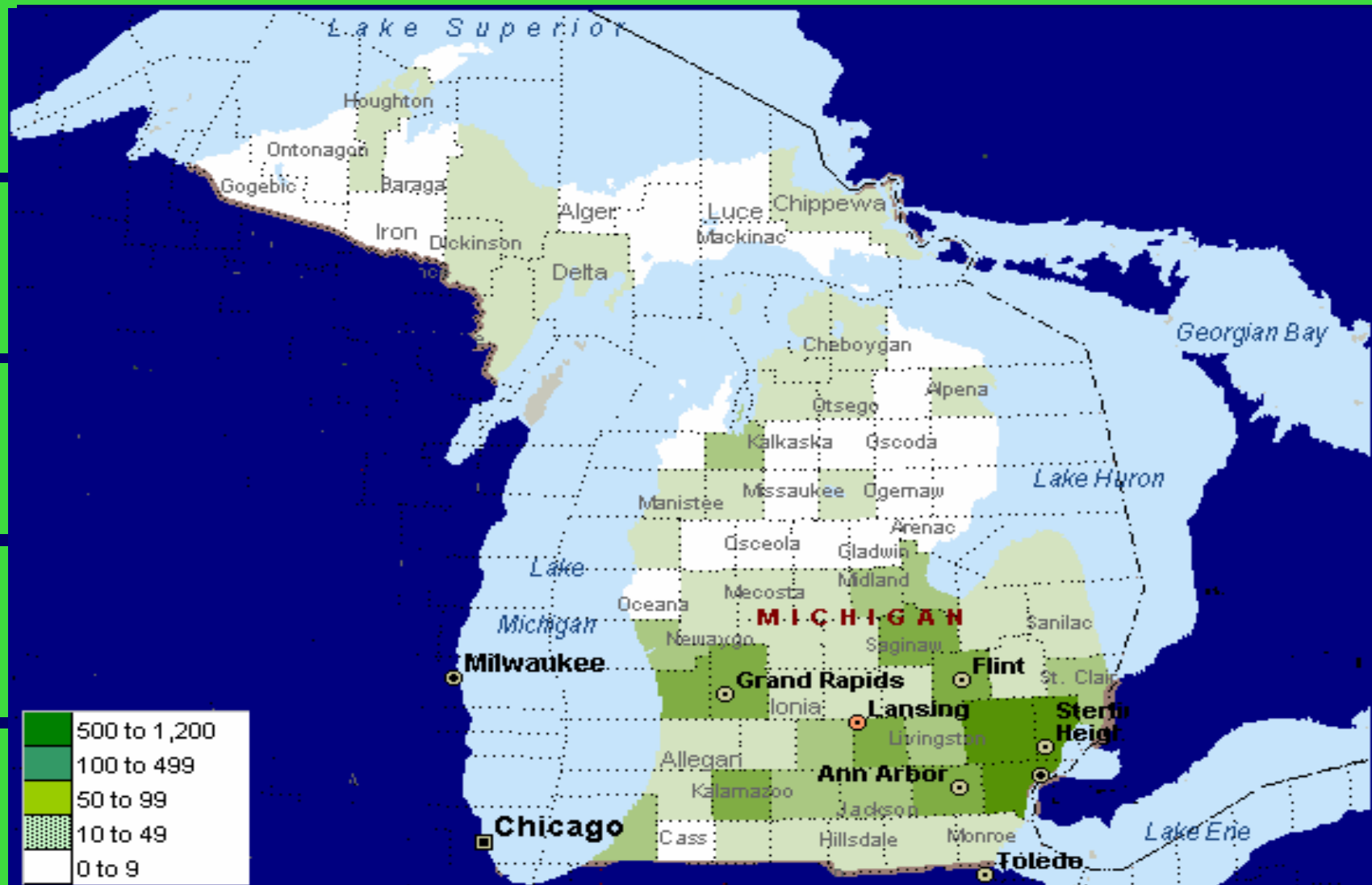
Locations of Michigan Private Practitioners Who Graduated 1980 - 1989



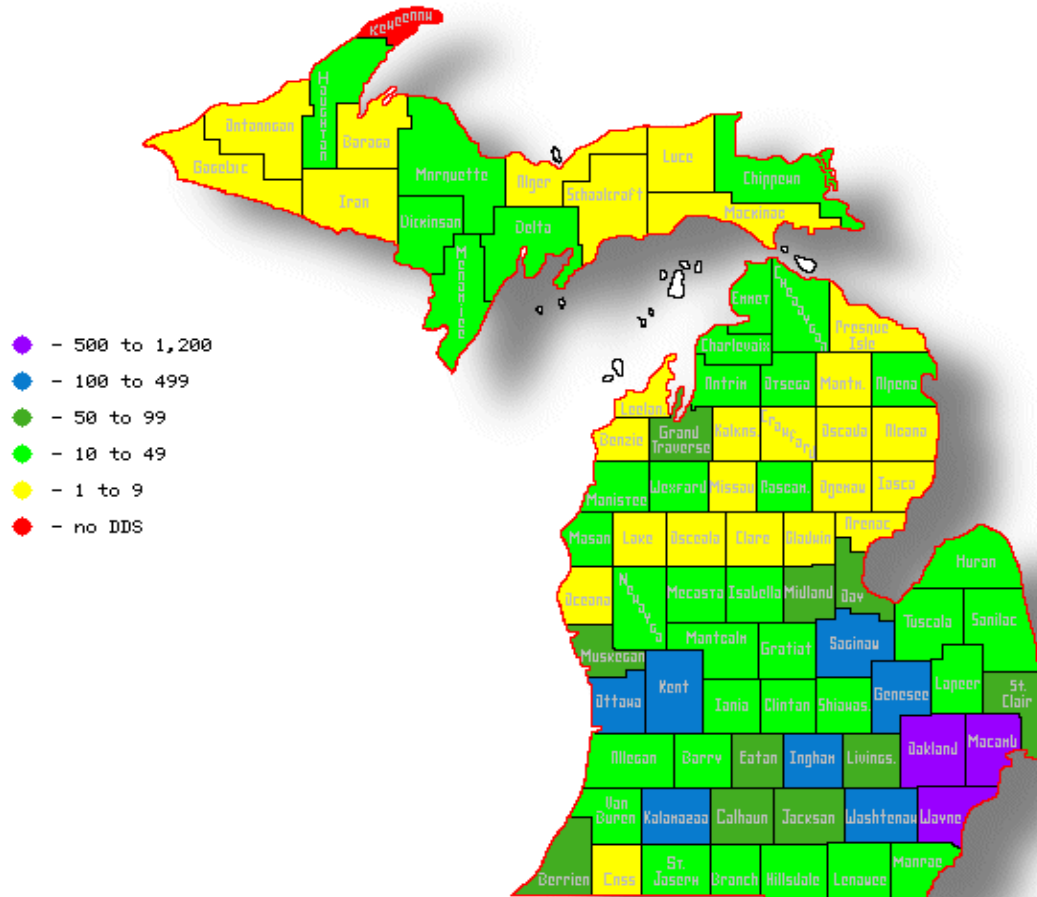
Locations of Michigan Private Practitioners Who Graduated 1990 - 2001



Professionally Active Dentists in Michigan, by County - 2002



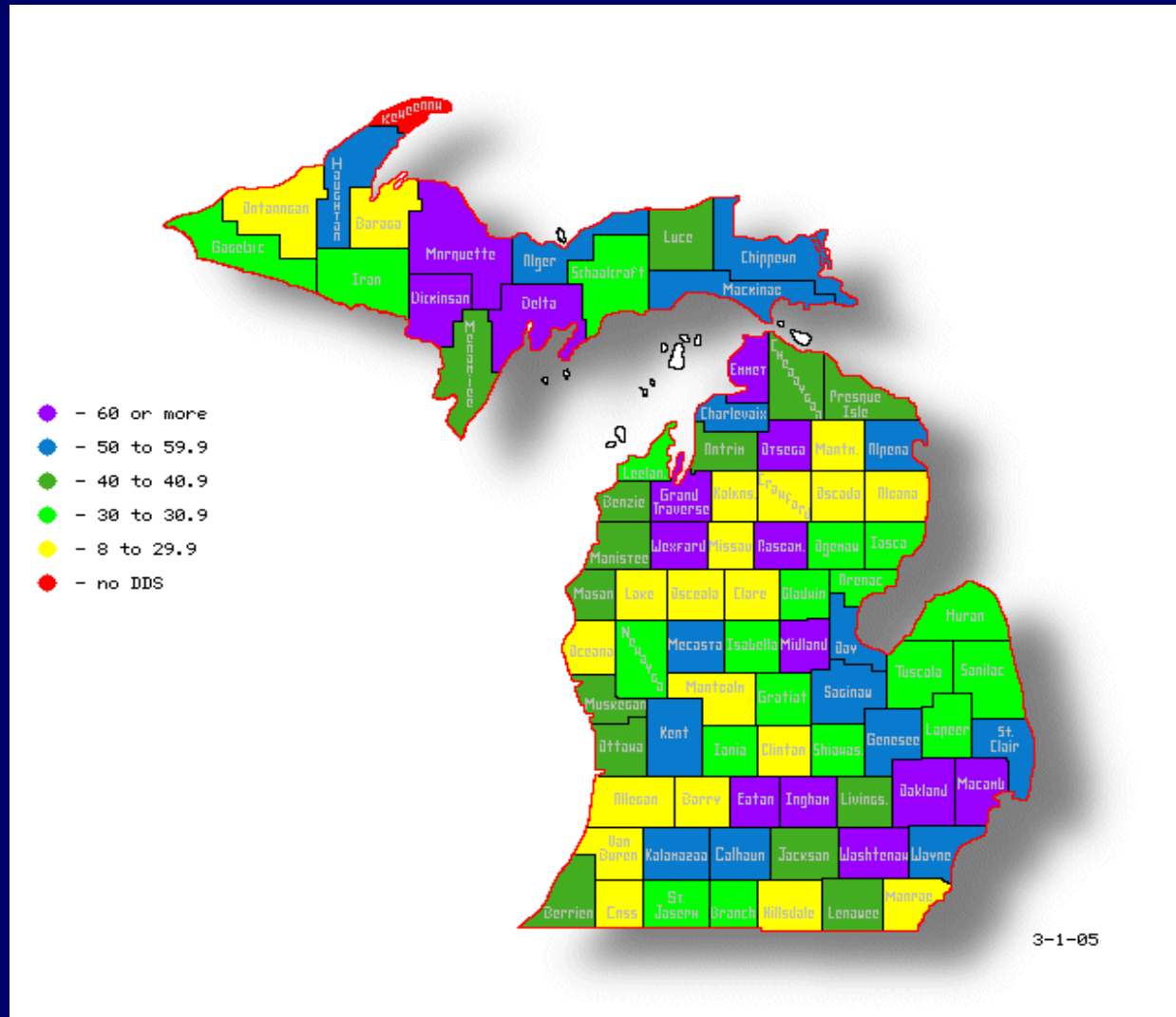
Professionally Active Dentists in Michigan, by County - 2002



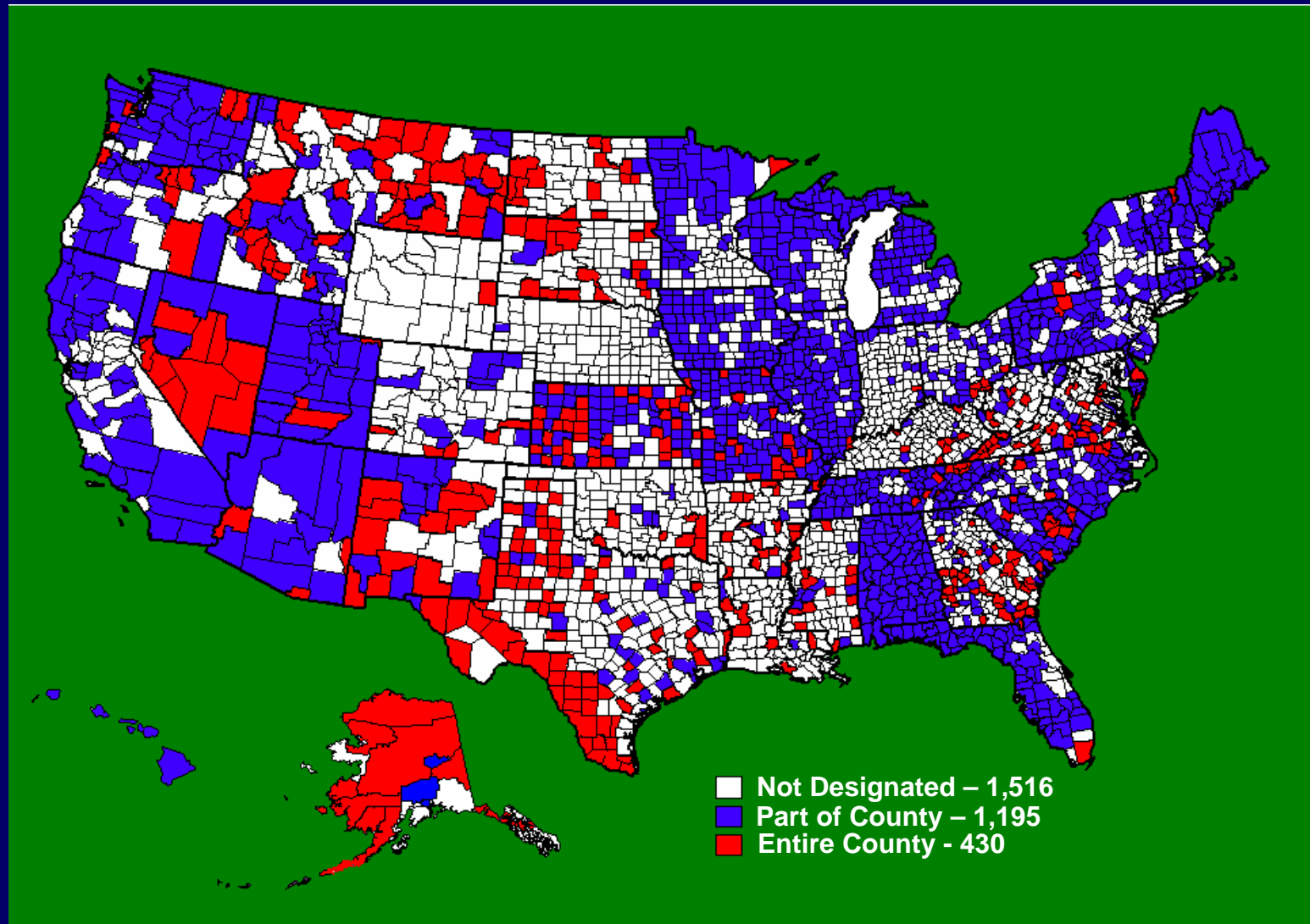
Location of Michigan Dentists Continued

- The next slide shows the per capita number of professionally active dentists in Michigan by county.
- The second slide displays Federally designated shortage counties in the U.S.
- The third and fourth slides show Federally designated shortage areas for Michigan overlaid with DDS/POP ratios and location of practicing dentists.

Professionally Active Dentists per 100,000 Population in Michigan, by County - 2002



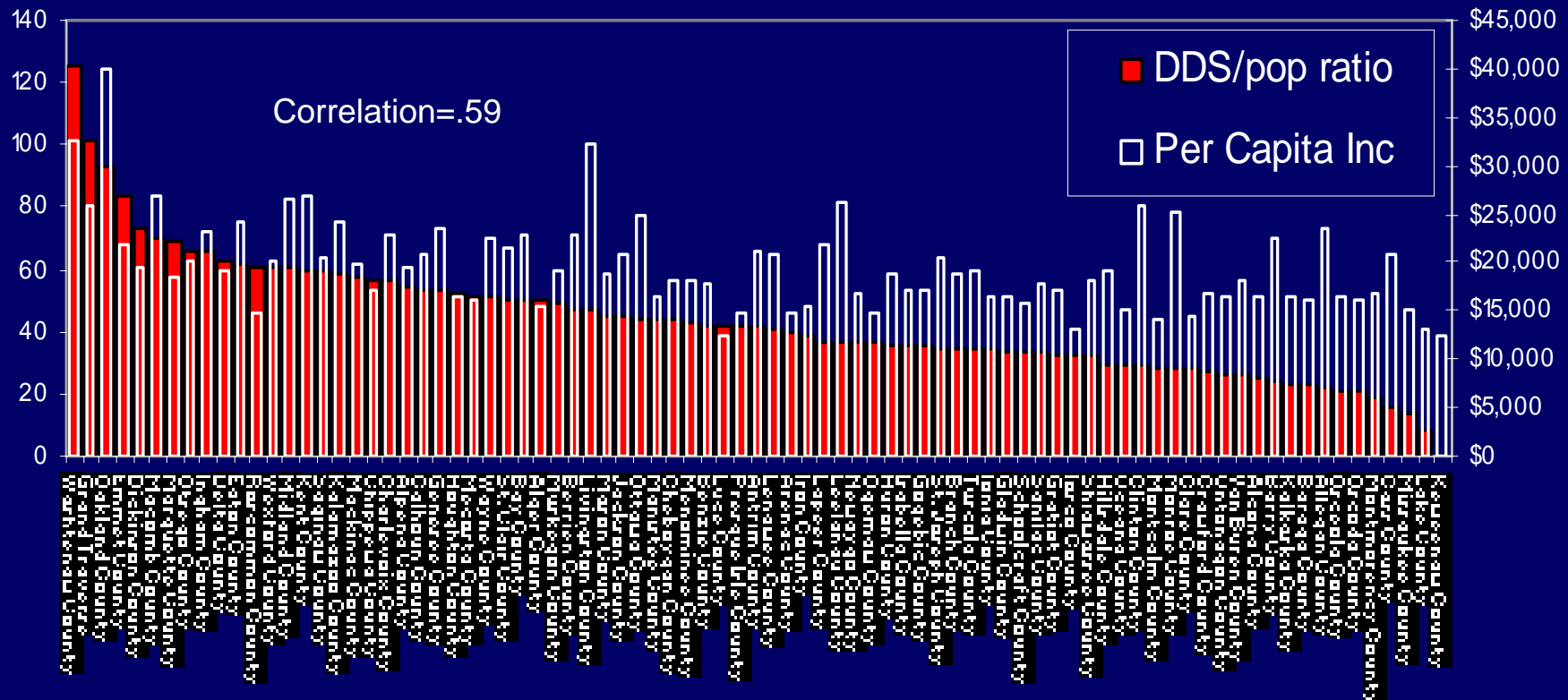
Dental Health Professional Shortage Areas (DHPSAs), 2002



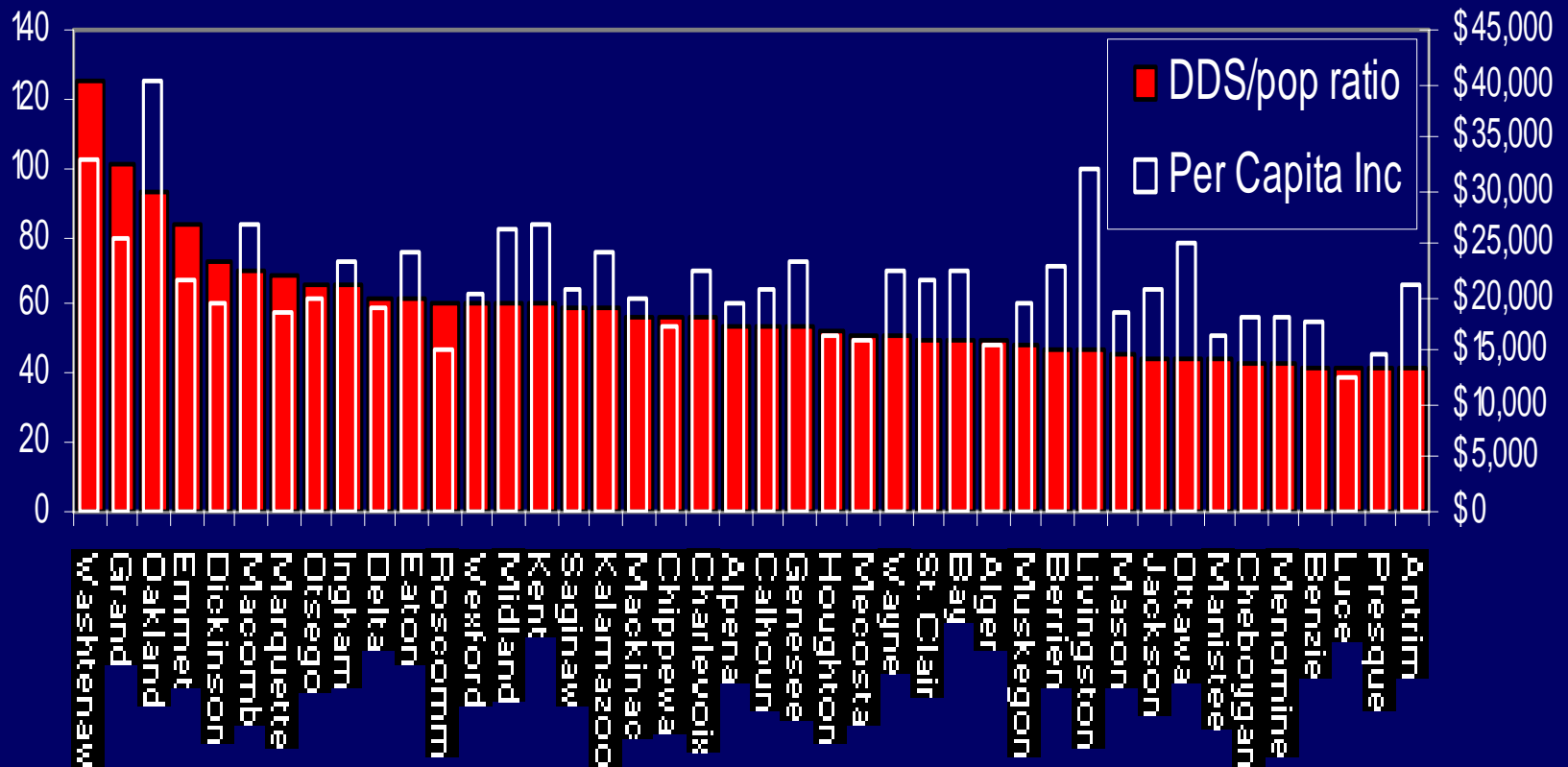
Location of Michigan Dentists Continued

- The next slide shows the relationship between per capita income and dentist-to-population ratio in Michigan.

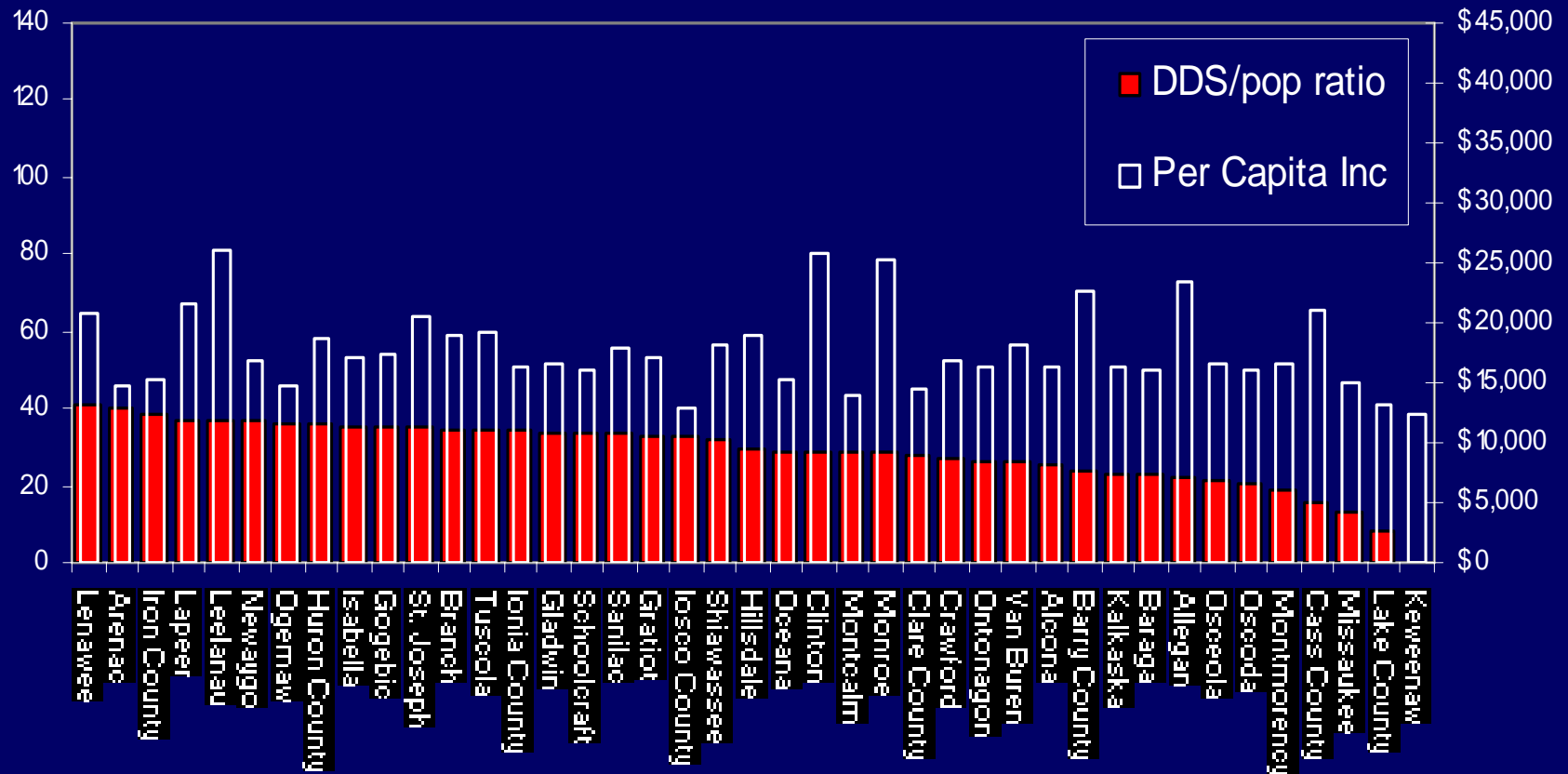
Per Capita Income and Number of Dentists per 100,000 Population in Michigan by County - 2002



Per Capita Income and Number of Dentists per 100,000 Population in Michigan by County - 2002



Per Capita Income and Number of Dentists per 100,000 Population in Michigan by County - 2002



Location of Michigan Dentists Summary

- There is variation in dental workforce within Michigan, but the typical urban-rural variation in the distribution of dentists is not evident.
- Some rural counties in Michigan have fewer dentists per capita than urban counties. Others have per-capita concentrations of dentists comparable to urban counties. Among those that do not, many are not far from a county with a relatively high concentration of dentists.



WORKFORCE PROJECTIONS

Future Number of Practicing Dentists

- In order to evaluate the dentist workforce for a state, some workforce goal is needed.
- Many different workforce goals are possible.
- This evaluation adopts as a goal that the current productivity adjusted population-to-dentist ratio should be maintained in the future.
- Other workforce goals are likely to yield different future workforce requirements.

Future Number of Practicing Dentists – Cont.

- To keep the DDS/POP ratio constant, enough new dentists must enter practice to:
 - **Replace retiring dentists**
 - **To keep up with population growth.**
- Population trends have been previously described.
- The next table shows the percentage of the 2000 dentist workforce which will still be practicing dentistry in future years.
- The percentage is in full- time equivalents.
 - Fully retired dentists do not provide services.
 - Part-time dentists provide only a portion of a FTE.

Future Number of Practicing Dentists – Cont.

Due to retirement and change to part-time practice as they age:

- **Dentists practicing today will only produce 56% of their current output in 2015.**
- **That will decline to 37% by 2025.**

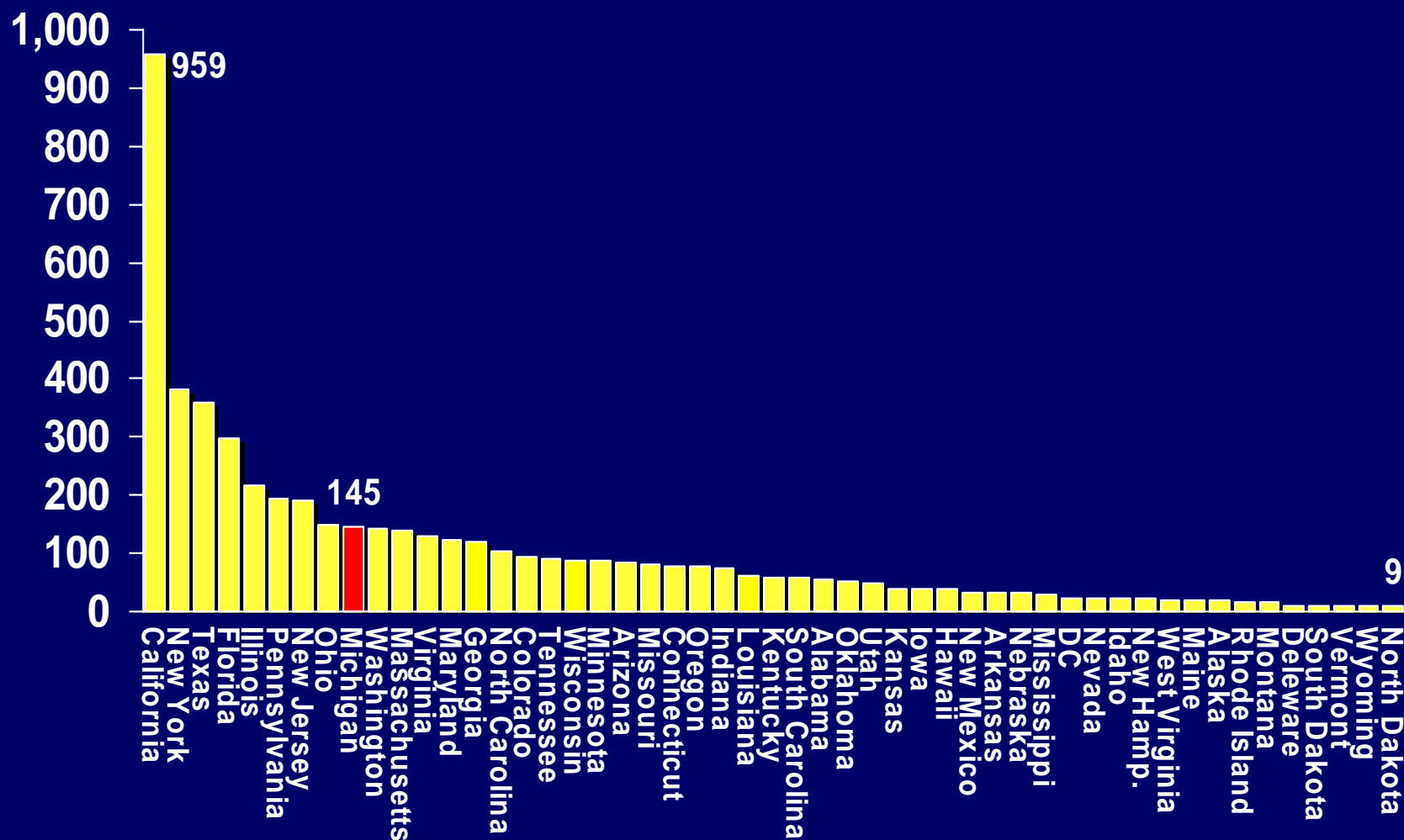
Number of Private Practice Dentists in 2000 and the Percent of those Who will be Practicing in 2015 & 2025

State	2000 PP	% Left 2015	% Left 2025
Illinois	7,499	59.2%	39.4%
Indiana	2,638	56.9%	36.4%
Ohio	5,499	55.9%	35.4%
Michigan	5,371	57.1%	36.6%
Wisconsin	2,861	59.0%	34.5%
U.S. Total	151,992	55.8%	36.6%

Future Number of Practicing Dentists – Cont.

- The next slide displays the number of new practitioners per year needed to keep the population-to-dentist ratio constant at the 2000 level.
- The number of dentists is further adjusted to reflect the expected increase in productivity of 1.05% annually.
- Productivity advances reduce the number of dentists needed to provide a given amount of dental services.
- The second slide shows the number of dentists needed and the number of dentists that have been locating in MI, displayed by those from MI and those from another state.

Number of Additional Dentists Needed per Year in Order to Keep the Dentist-to-Population Ratio the Same in 2025



Annual Number of New Dentists Needed* and Supplied to Keep the Population to dentist Ratio Constant in 2025: Michigan

Number of dentists needed when not adjusting for productivity	145
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Number of dentists needed when adjusting for productivity	115
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New Dentists from Michigan	115
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New Dentists not from Michigan	22
--------------------------------	----

Difference when not adjusting for productivity	- 8
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Difference when adjusting for productivity	+ 22
---	------

91* Sources of new dentists are considered in the dental education section

Future Number of Practicing Dentists – Cont.

Using data through 2003, analysis indicates:

- **To maintain the state's dental productive capacity in relation to its population growth, Michigan will have an estimated surplus of 22 dentists annually compared to the number needed to keep the productivity adjusted population-to-dentist ratio constant in 2025.**

Future Number of Practicing Dentists – Cont.

- **A surplus of 22 dentists annually is ...**
 - Not perfectly precise and the true number may vary as circumstances change.
 - Many factors could change and that would alter the future requirements for dentists in Michigan. The major factors are:
 - > Population could grow more or less rapidly than predicted.
 - > Economic growth could be more or less than predicted.
 - > Productivity enhancements could also be more or less than predicted.
 - > The number of dentists that Michigan imports from other states could change.

IV. Supply of Dental Care Dental Education

Dental Education Overview

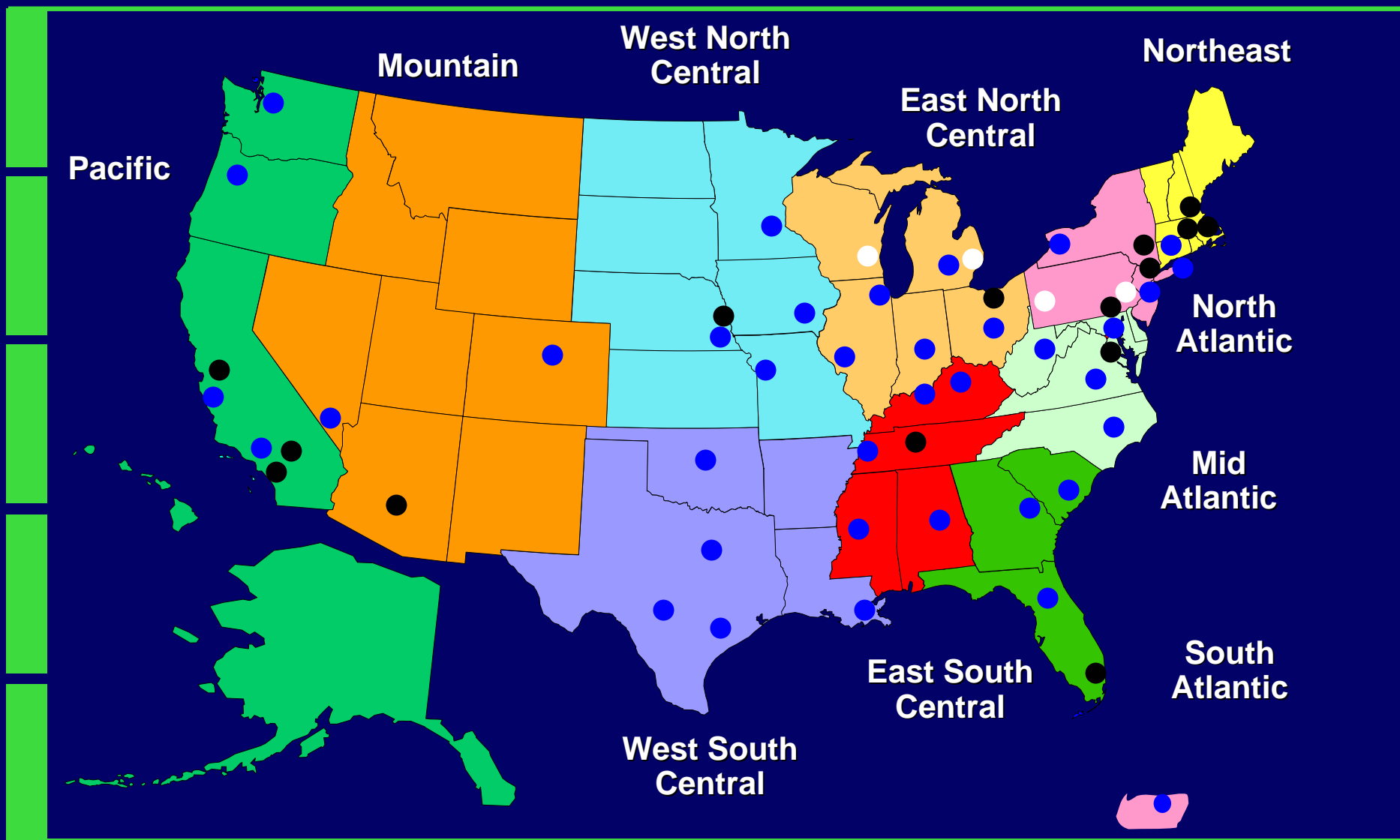
- The focus now shifts to the dental education pipeline.
- First, to set the context, regional and state variation in dental education will be described.
- Then, dental education in Michigan will be considered in detail.



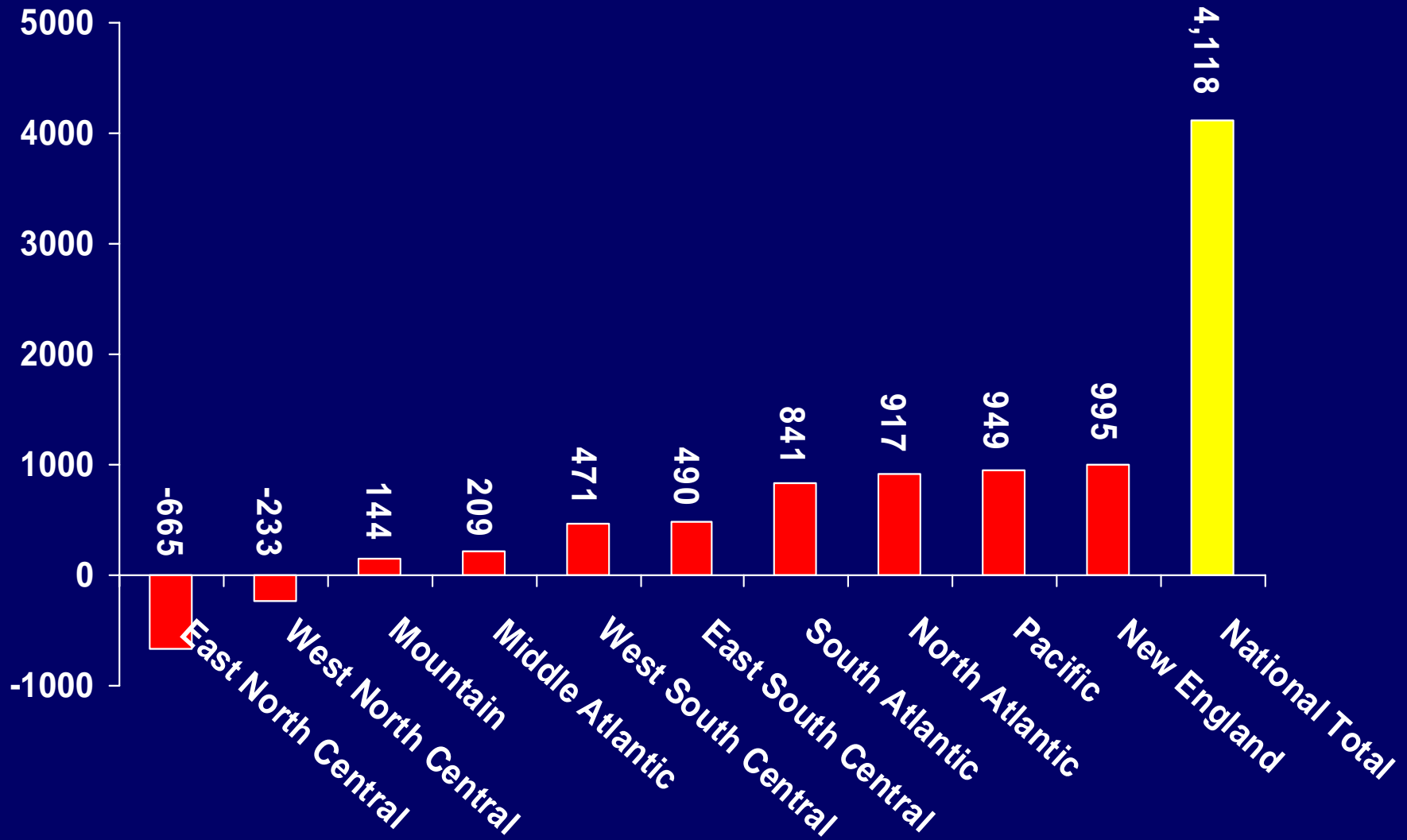
REGIONAL & STATE VARIATION IN STUDENTS GRADUATING FROM DENTAL SCHOOLS

Location of Dental Schools

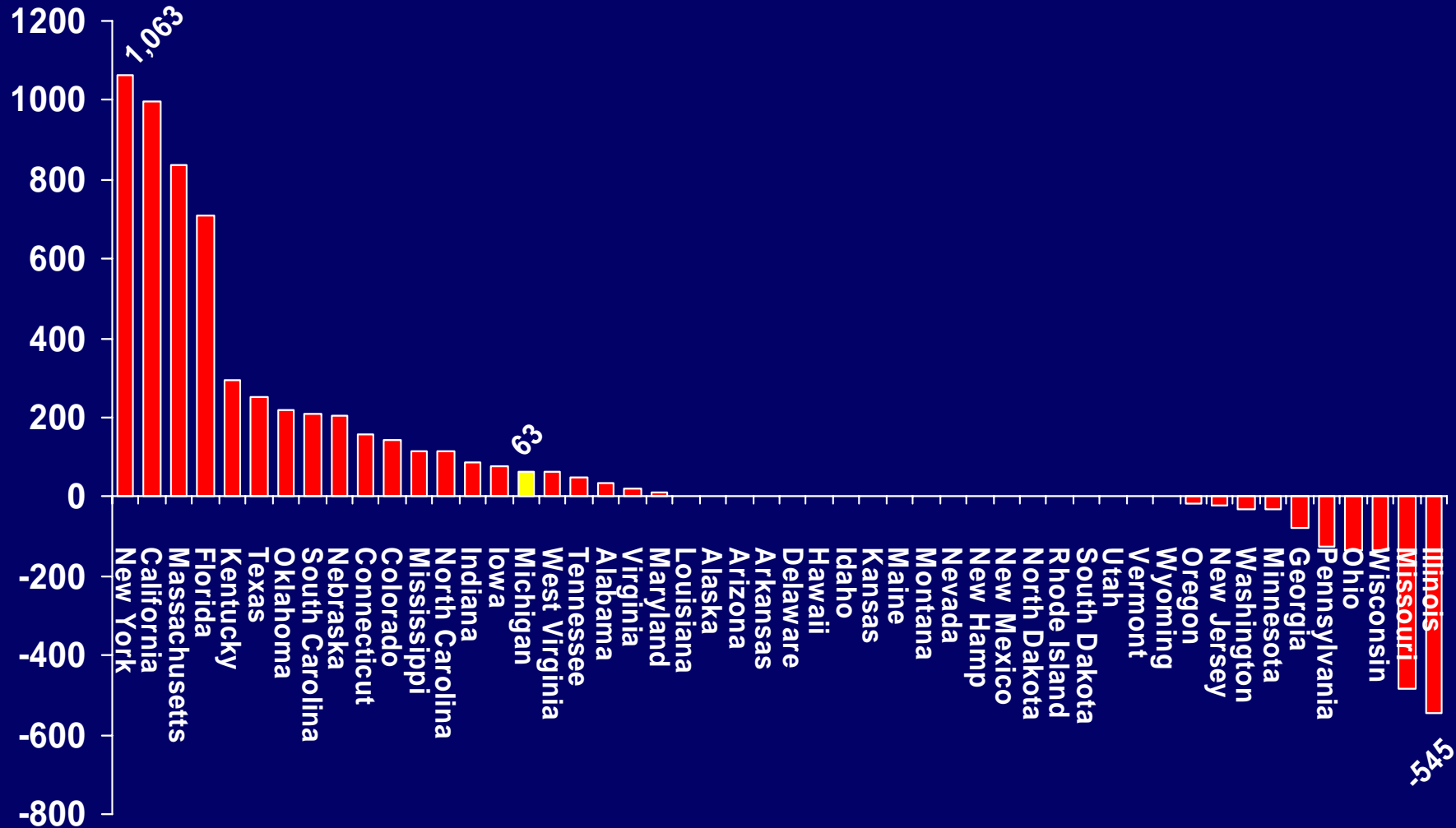
- Public
- Private
- Private-State Related



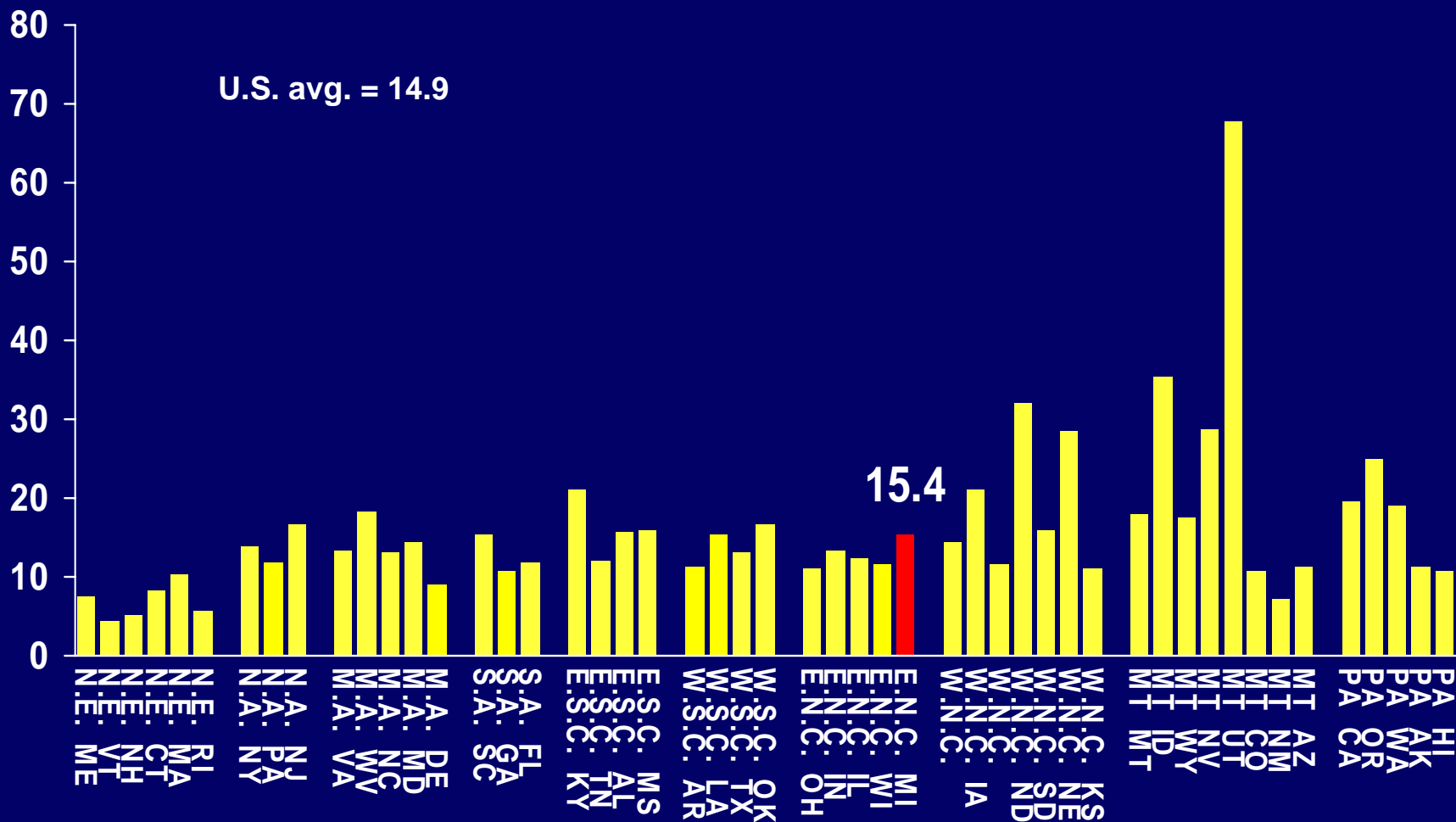
Change in the Number of Students Enrolled in Dental Schools by Region of School, 1960-2001



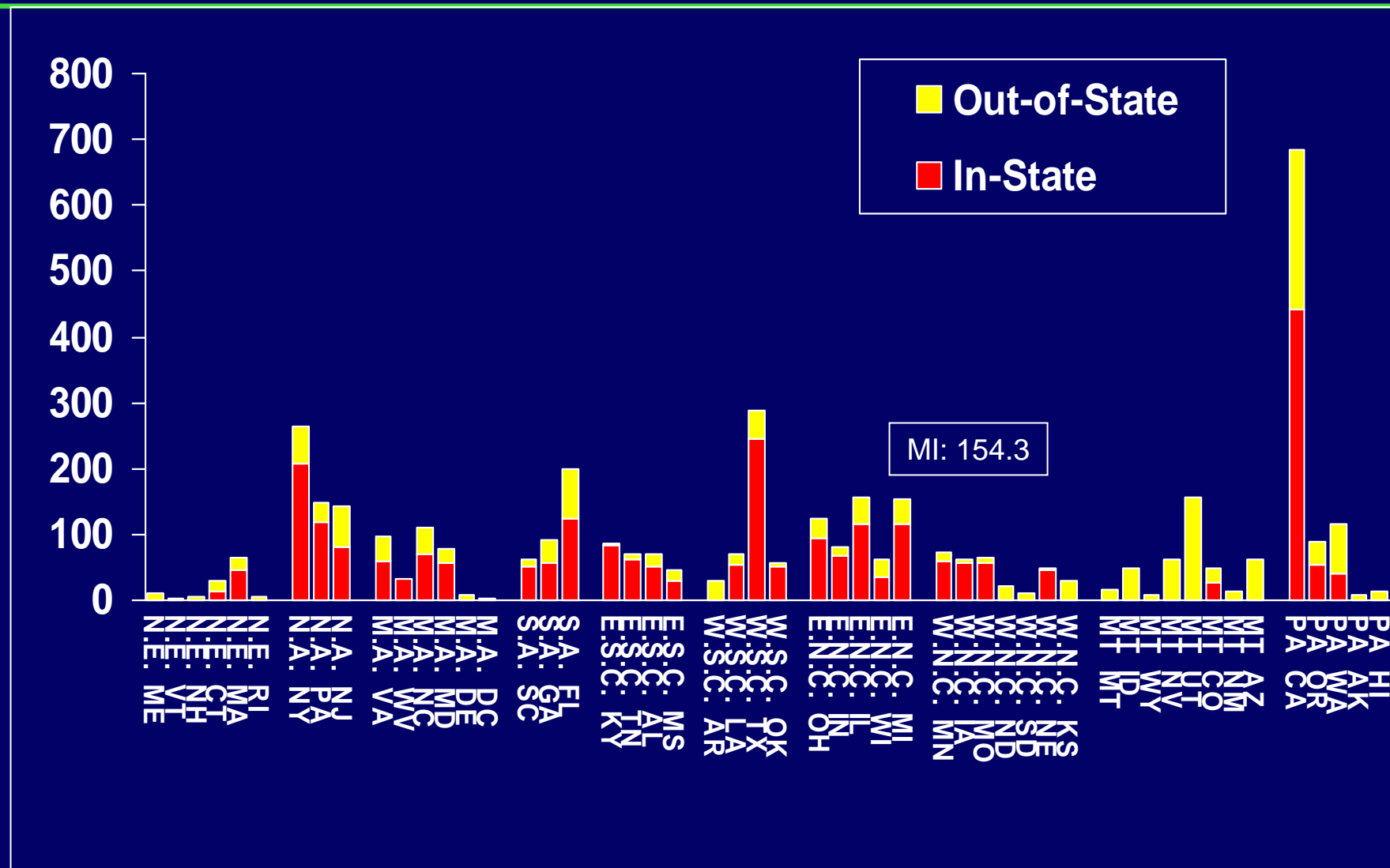
Change in the Number of Dental Students by State, 1960-2001



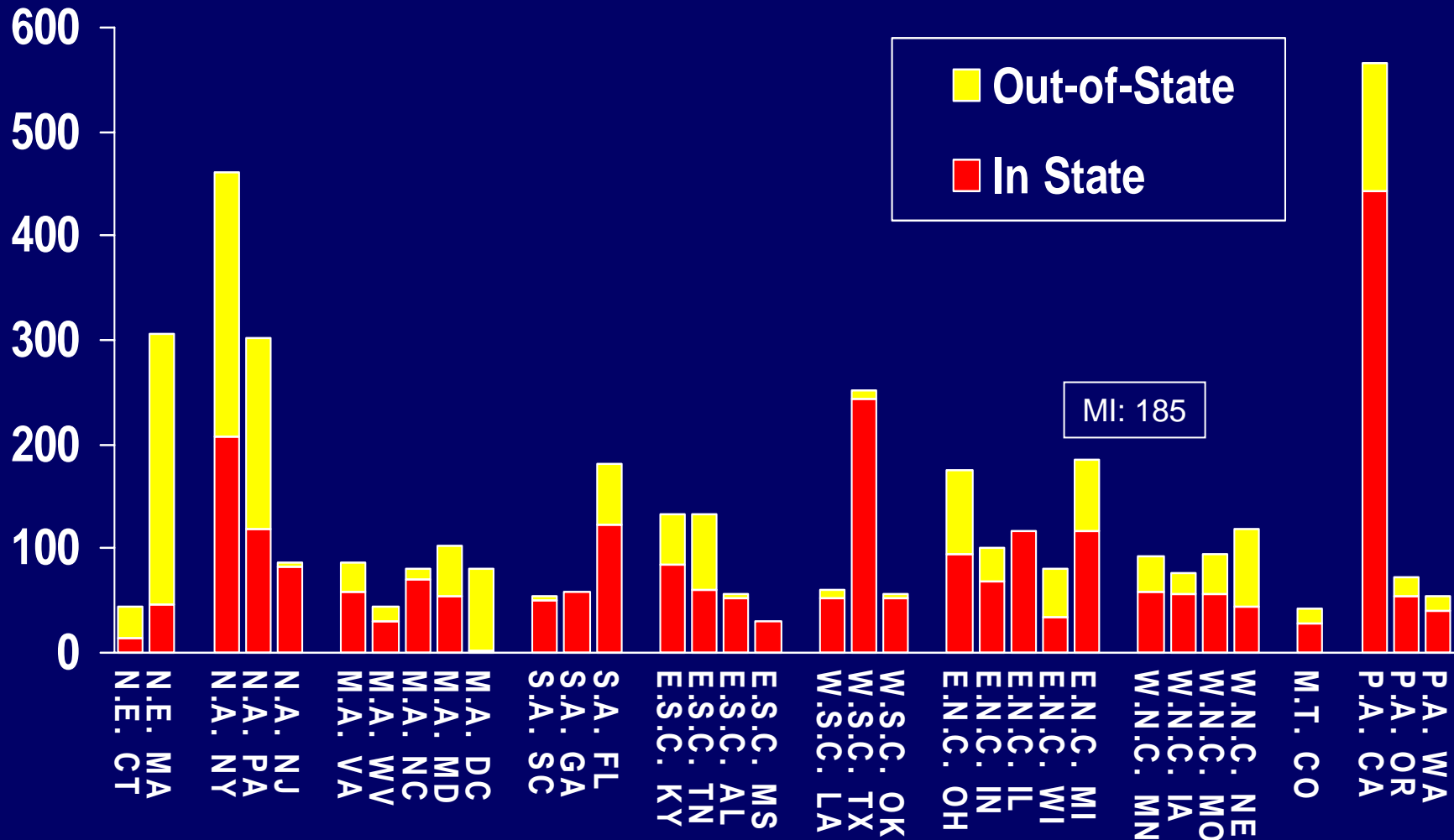
First-Year Dental Students per 1,000,000 Population by State of Residence (3-Year Average: 01/02, 02/03, 03/04)



First-Year Dental Students by State and Region of Residence (3-Year Average: 01/02, 02/03, 03/04)



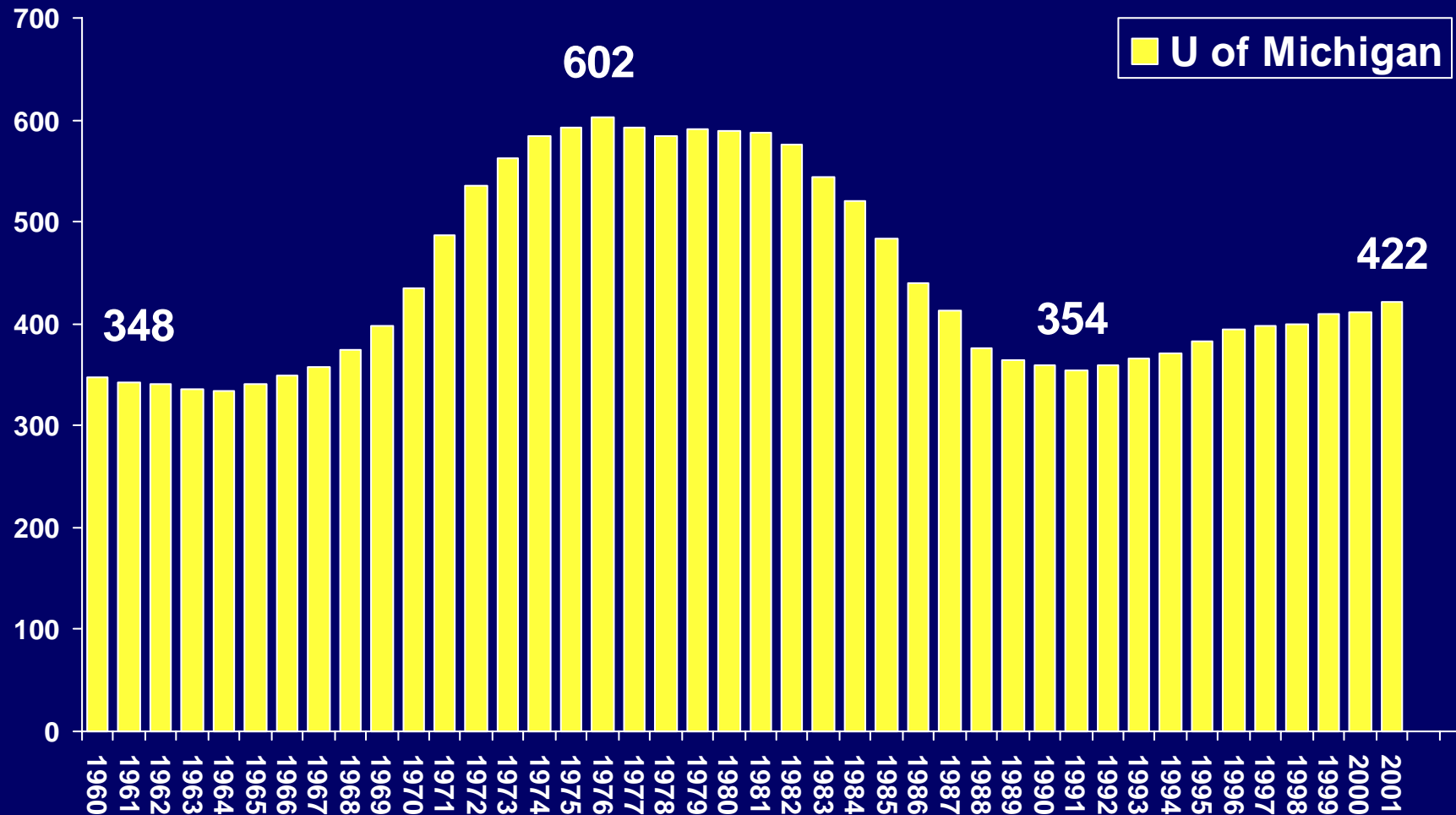
First-Year Dental School Students by State and Region of School (3-Year Average: 01/02, 02/03, 03/04)



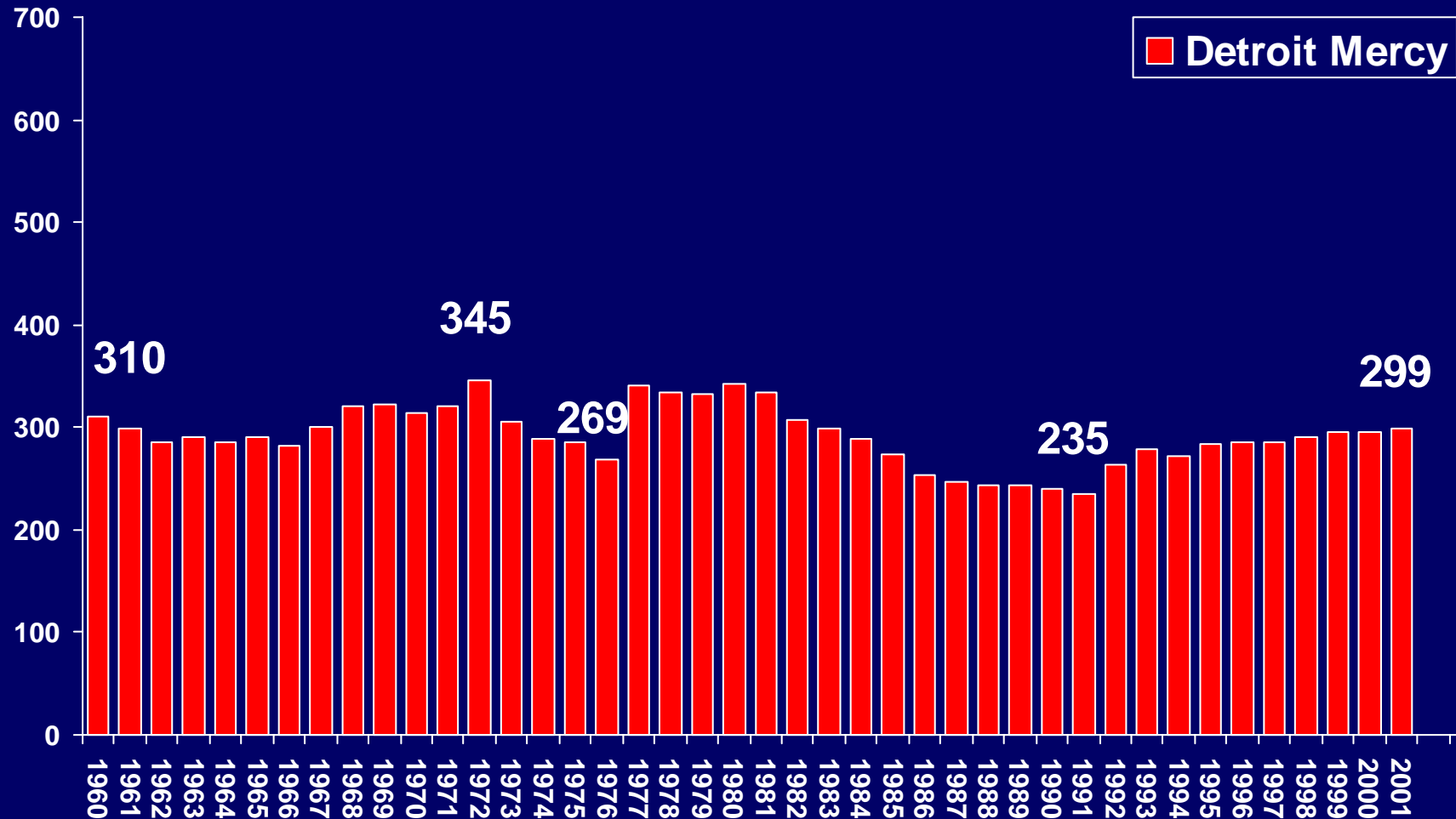
In-State and Out of State are derived from the designated state of first year residents from the ADA Pre-Doc survey



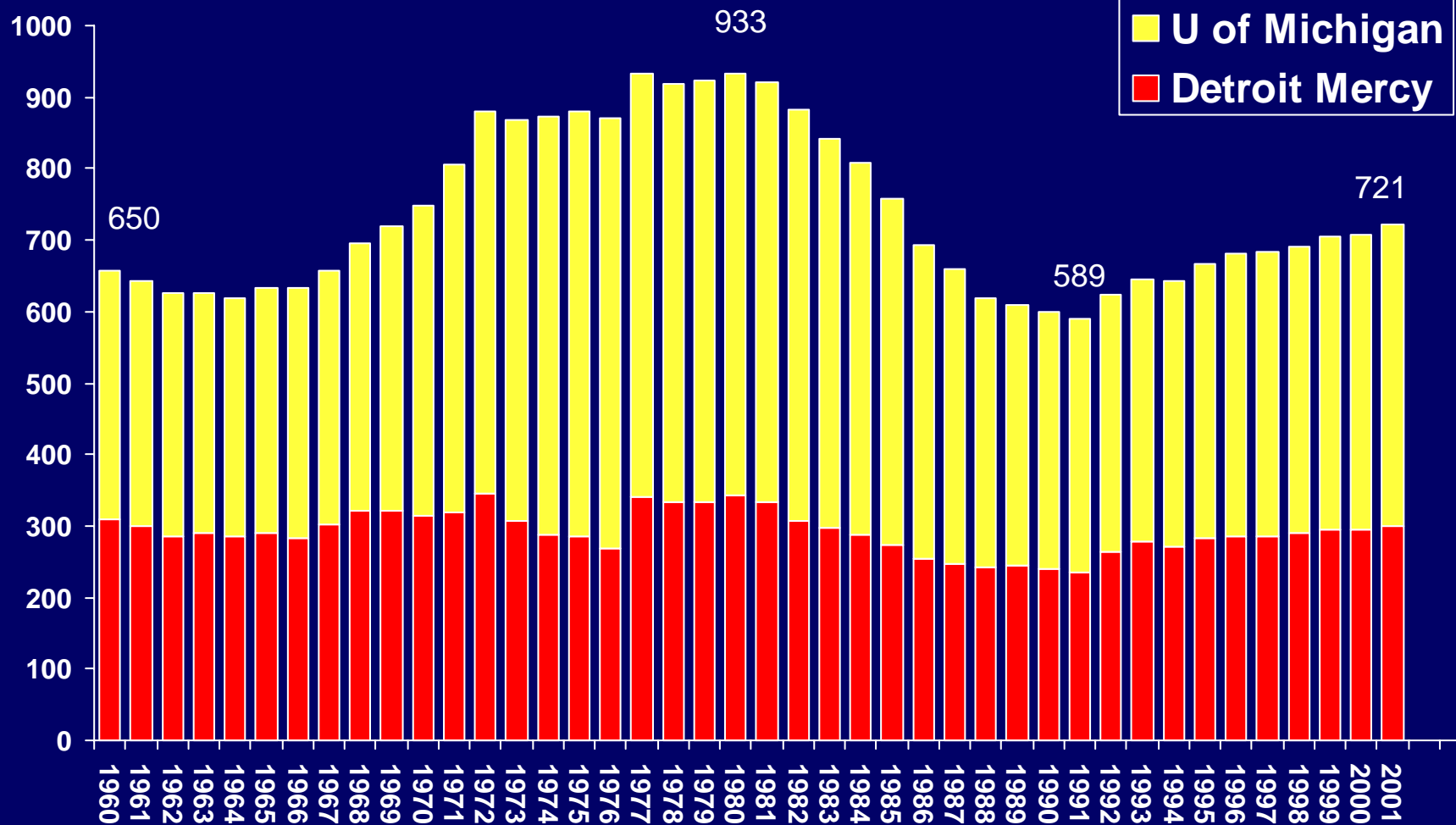
Total Predoctoral Enrollment for University of Michigan, 1960-2001



Total Predoctoral Enrollment for Detroit Mercy, 1960-2001



Total Predoctoral Enrollment for University of Michigan and Detroit Mercy, 1960-2001



Dental Education Summary I

- Total pre-doc dental school enrollment in Michigan increased by 71 students from 1960 to 2001.
- This increase took place within the context of a large overall decrease for the East North Central region.
- Between 1960 and 1980 Michigan pre-doc enrollment increased from 658 to 933 students.
- This increase was followed by a sharp decline in enrollment from 933 in 1980 to 589 in 1991, a 37 percent decrease.
- Since 1991 enrollment has increased by 22.4% to 721 students in 2001.

Dental Education Summary I

- These changes in enrollment were largely due to changes in the number of dental students attending the University of Michigan. Dental school enrollment at the University of Detroit during that time was relatively stable.
- Currently, the per-capita number of students from Michigan going to dental school is somewhat higher than the U.S. average, and somewhat higher than other states in the East North Central region.
- Based on state of residence for 1st year pre-doc dental students, about 1/4 of dental school students from Michigan go to an out-of-state dental school.



DENTAL EDUCATION IN MICHIGAN

Dental Schools Attended by Michigan Residents in Academic Years: 2001/02, 2002/03, and 2003/04

Type	School	2001/02	2002/03	2003/04	Total
In State					
	U of Mich	68	58	63	189
	U of Detroit	55	52	53	160
Out of State					
Public					
	Ohio St	3	0	0	3
	SUNY Buffalo	0	2	3	5
	U of KY	1	1	0	2
	U of NE	0	0	1	1
	U of NC	0	1	1	2
	U of IN	0	3	3	6
	U of MD	0	2	1	3
	U Conn	0	2	0	2
Public Total		4	11	9	24
Priv-State					
	Temple	2	1	1	4
	Marquette	2	6	2	10
Pr_St Total		4	7	3	14

Dental Schools Attended by Michigan Residents in Academic Years: 2001/02, 2002/03 and 2003/04

<i>Type</i>	<i>School</i>	<i>2001/02</i>	<i>2002/03</i>	<i>2003/04</i>	<i>Total</i>
Private					
	Case Western	1	5	3	9
	Columbia	1	1	2	4
	NYU	2	5	6	13
	U Pitts	1	0	1	2
	U of Penn	0	3	0	3
	Harvard	0	3	1	4
	BU	2	3	1	6
	Tufts	0	5	2	7
	Howard	2	2	1	5
	Creighton	0	0	1	1
	Meharry	2	2	0	4
	Nova	3	5	0	8
	U of Pacifica	1	0	1	2
	Loma Linda	1	3	1	5
	UCLA	0	1	1	2
	USC	0	1	0	1
Priv Tot		16	39	21	76
Grand Total		147	167	149	463

State of Residence of First-Year University of Michigan Dental Students for Academic Years – 2001/02, 02/03, 03/04

STATE	2001/02	2002/03	2003/04	Total
Michigan	68	58	63	189
California	10	3	5	18
Utah	2	4	6	12
Washington	2	3	6	11
Ohio	3	3	3	9
Wisconsin	2	5	2	9
Florida	2	3	3	8
Illinois	3	2	1	6
Nevada	3	3	0	6
Arizona	1	2	2	5
Georgia	1	2	2	5
New Jersey	2	0	2	4
Virginia	3	0	1	4
Pennsylvania	2	1	0	3
New York	1	2	0	3
Indiana	0	2	1	3
Other	8	12	10	28
Grand Total	113	105	107	325

According to the residency claimed by first year students, 58.1% of University of Michigan Dental School Students are from Michigan



State of Residence of First-Year University of Detroit Dental Students for Academic Years – 2001/02, 02/03, 03/04

STATE	2001/02	2002/03	2003/04	Total
Michigan	55	52	53	160
Ontario	15	17	17	49
California	1	3	1	5
Texas	3	1	0	4
Illinois	0	1	1	2
Other	3	3	5	11
Grand Total	77	77	77	231

According to the residency claimed by first year students, 69.3% of University of Detroit Dental School Students are from Michigan



State of Origin & Education

- The next slide shows the state of origin and the place of dental education for Michigan practitioners who graduated during two non-overlapping time periods of:
 - 1975-1985
 - 1985-1995
- The first time period is for MI practitioners in 1991.
- The second time period is for MI practitioners in 2001.
- The five-year lag allows dentists a few years after graduation for additional education and establishing a practice.

Michigan Private Practitioners in 1991 Who Graduated Between 1975 and 1985, by Origin and School Attended

State of Origin	Dental School	Number	Percent
Michigan			
	Michigan	1,579	80.2%
	Other	106	5.4%
Total		1,685	85.6%
Outside Michigan			
	Michigan	98	5.0%
	Other	186	9.4%
Total		284	14.4%
Grand Total		1,969	100.0%

Michigan Private Practitioners in 2001 Who Graduated Between 1985 and 1995, by Origin and School Attended

State of Origin	Dental School	Number	Percent
Michigan			
	Michigan	1,091	72.2%
	Other	180	11.9%
Total		1,271	84.1%
Outside Michigan			
	Michigan	99	6.5%
	Other	142	9.4%
Total		241	15.9%
Grand Total		1,512	100.0%

State of Origin & Education

- The number of Michigan dentists in 2001 who graduated between 1985 and 1995 dropped by 23.2% compared to those in 1991 who graduated between 1975 and 1985.
- The percent of Michigan dentists originally from Michigan dropped slightly from 85.6% to 84.1%.
- The percent of Michigan dentists originally from Michigan who graduated from a Michigan dental school declined from 80.2% to 72.2%.

State of Origin & Education

- The next slide shows the yield in Michigan practitioners from various educational routes to practice.
- State of origin in this slide was based on social security number.
- Clearly, the highest yield results from persons who grew up in Michigan and attended Dental School in Michigan.
- Eighty-two percent of those individuals were practicing in Michigan.

State of Origin, State of School & State of Practice - Annual Averages Based on Dentists who Graduated 1985-1995

State of Origin	State of School	State of Practice:	#	%
Michigan	MI	Michigan	99	82%
		Not Michigan	22	18%
	Not MI	Michigan	16	31%
		Not Michigan	35	69%
Not Michigan	MI	Michigan	12	43%
		Not Michigan	16	57%
	Not MI	Michigan	13	
		Not Michigan		



As shown in the previous slides, about one-out-of-six dentists practicing in Michigan is originally from another state. Which states are they from? Have the states of origin of these dentists changed over time?

State of Origin for Michigan Dentists in 1991 who did not Grow up in MI and Graduated from Dental School 1975-85

State of Origin	# of Dentists	% of Total
■ Illinois	50	17.6%
■ Ohio	40	14.0%
■ Indiana	38	13.4%
■ New York	25	8.8%
■ Pennsylvania	18	6.2%
■ California	16	5.5%
■ Wisconsin	13	4.7%
■ New Jersey	10	3.5%
■ Massachusetts	7	2.4%

State of origin for Michigan dentists in 2001 who did not grow up in MI and graduated from dental school 1985-95

State of Origin	# of Dentists	% of Total
■ Illinois	37	15.4%
■ New York	29	12.0%
■ Ohio	28	11.6%
■ California	16	6.6%
■ Indiana	15	6.2%
■ Pennsylvania	13	5.4%
■ Wisconsin	10	4.1%
■ New Jersey	8	3.3%
■ Iowa	7	2.9%

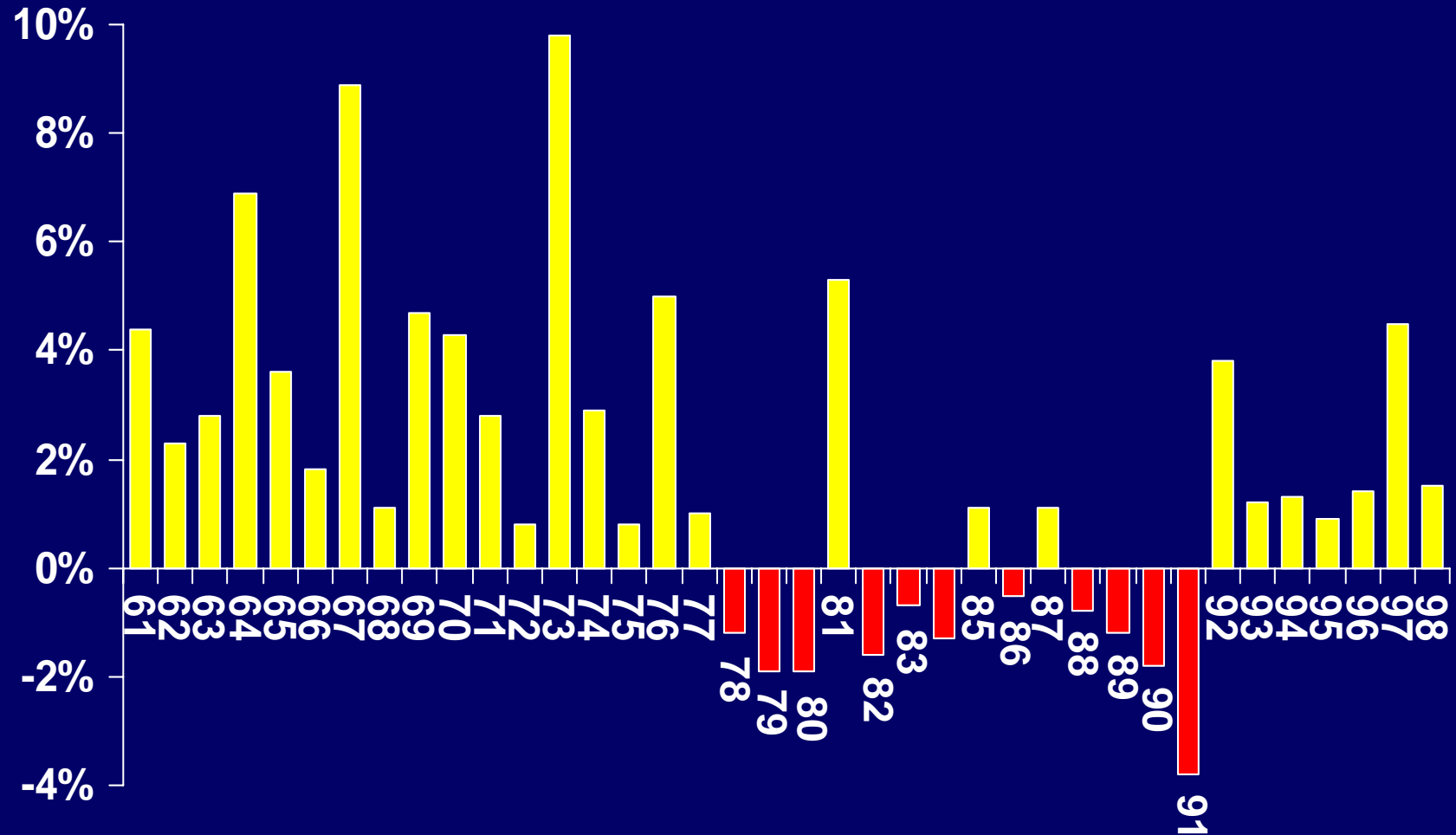
Dental Education Summary 2

- Almost three out of four graduates (72.2%) from Michigan Dental Schools practice in Michigan (based on dentists who graduated 1985 to 1995).
- 78.7 percent of Michigan dentists, who graduated from dental school between 1985 and 1995, went to dental school in Michigan. The percentage for those who graduated between 1975 and 1985 was 85.2 percent.
- Many states contribute to the supply of dentists in Michigan. The top contributing states have remained relatively stable from 1975 to 1995.
- New York is the only state that sent more dentists to Michigan in 1985-95 than 1975-85.

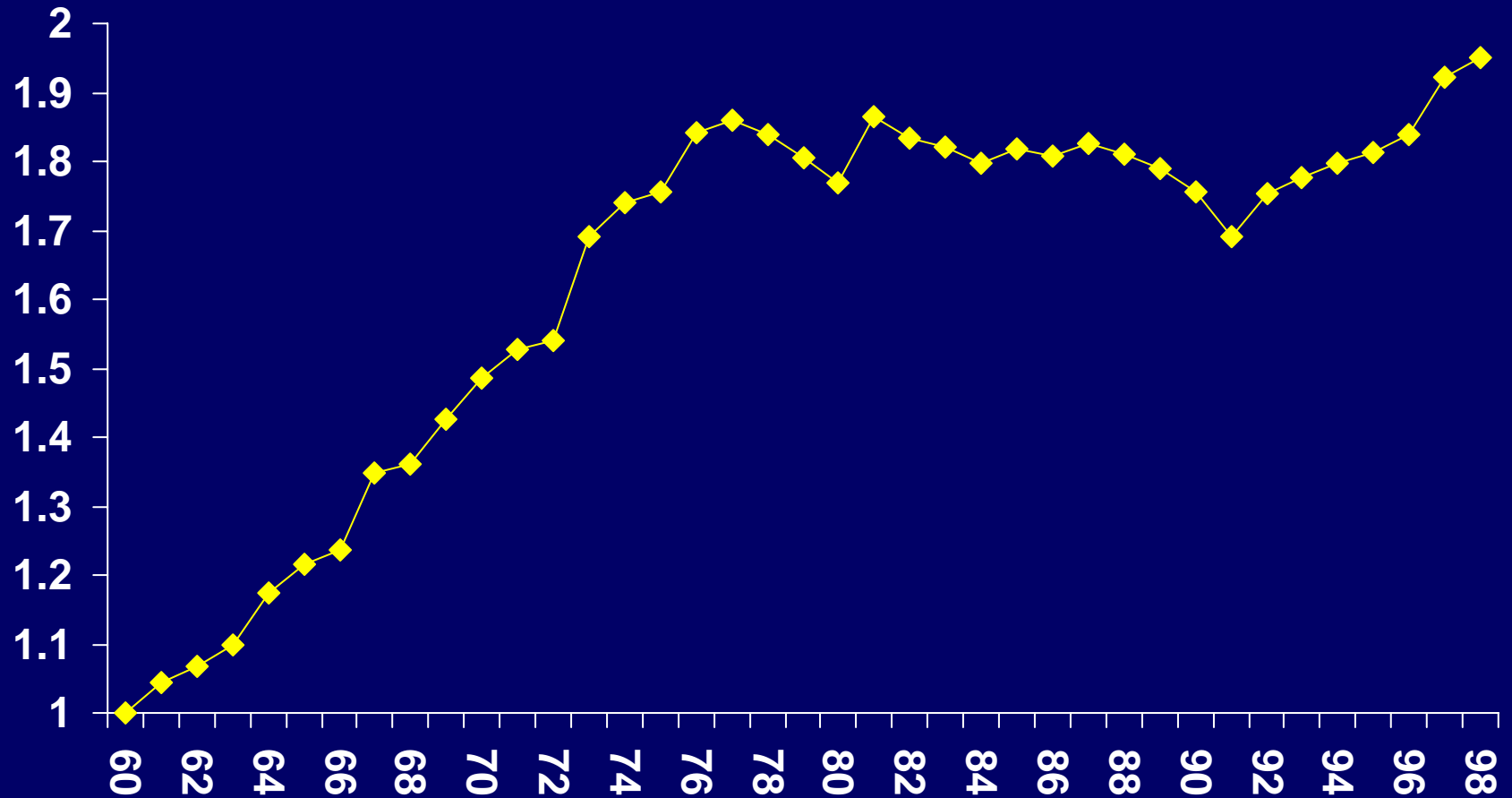
VII. APPENDICES

APPENDIX A: PRODUCTIVITY

Percent Change in Dentist Productivity, by Year



Productivity Growth, 1960-1998



Population, Dentists, and Dentist-to-Population Ratios, 2020 Productivity-Adjusted vs. Not Adjusted

2020 Pop -- 332.1 Million

Dentists in 1000s

Ratio=DDS/100,000

	10% Decline	Constant Dentists	Constant Enrollment	Projected Dentists	Constant Ratio
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No Productivity Growth

DDS	138.0	153.4	158.0	168.5	181.0
DDS/POP	41.6	46.1	47.6	50.7	54.5

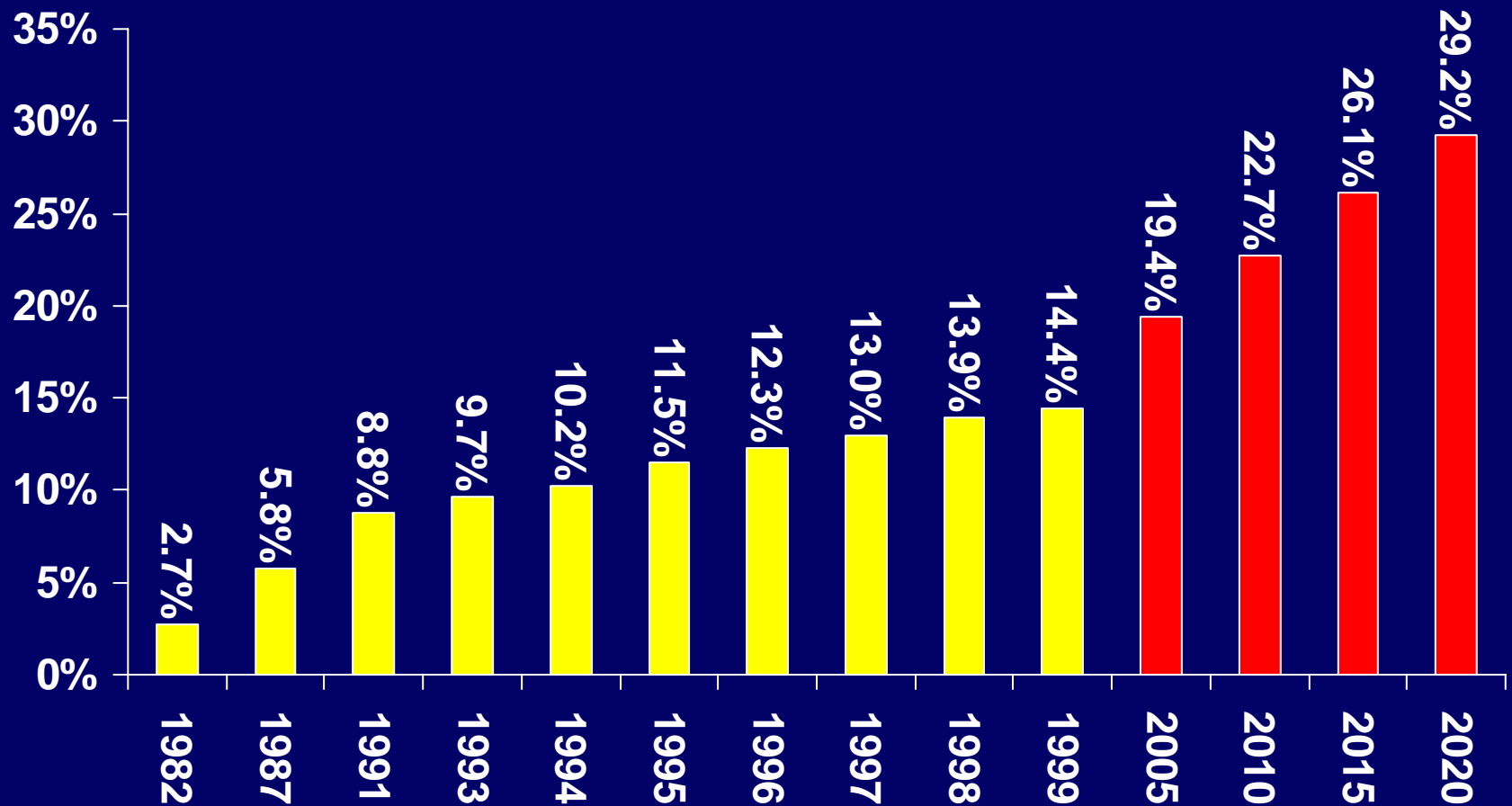
Adjusted for a Productivity Growth – 1.05% Annually

DDS	170.0	189.0	194.7	207.6	223.1
DDS/POP	41.2	56.9	58.6	62.5	67.2



APPENDIX B: IMPACT OF FEMALE DENTISTS

Female Dentists as a Percentage of Active Private Practitioners in the U.S.



Percentage Distribution of Part-time Private Practitioners, by Gender and Age Group

	1987	1994	1999
Male	10.2%	13.6%	14.7%
<40 Years old	4.6%	4.9%	5.6%
40–59 Years Old	8.1%	8.7%	8.7%
60+ Years Old	40.5%	42.1%	46.2%
Female	26.3%	29.8%	29.9%
<40 Years old	25.4%	29.6%	31.3%
40–59 Years Old	27.7%	29.0%	28.6%
60+ Years Old	N/A*	N/A*	N/A*

* Data are unreliable because the number of respondents was too low.

Average Hours and Weeks Worked, by Age, (1999 Survey of Career Patterns)

AGE	< 35	50-59	60-64	All <65
HOURS PER WEEK				
PT Male	20.2	20.1	23.9	21.7
PT Female	20.7	19.9	21.0	20.6
FT Male	40.2	37.3	36.5	38.3
FT Female	38.6	38.9	38.8	38.0
WEEKS PER YEAR				
PT Male	49.4	45.1	44.3	45.8
PT Female	45.6	45.3	47.3	46.3
FT Male	48.8	47.8	46.7	48.0
FT Female	47.6	47.2	45.9	47.7

Reduction in Total Hours Worked Due to Female Dentists Compared to an All Male Dentist Workforce

Year	Total Hrs
1982	0.7%
1987	1.0%
1991	1.3%
1995	1.6%
2000	2.0%
2010	2.9%
2020	4.6%
2030	5.4%